Search history

Krishnan 10/786613 02/22/2006

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=> d his full

     (FILE 'HOME' ENTERED AT 11:58:08 ON 22 FEB 2006)

     FILE 'REGISTRY' ENTERED AT 11:58:19 ON 22 FEB 2006
L1                STRUCTURE UPLOADED
L2             50 SEA SSS SAM L1
                  D STAT QUE L2
L3           1062 SEA SSS FUL L1
                  SAVE TEMP L3 KRI613STRB/A
L4            330 SEA ABB=ON  PLU=ON  L3 AND NC>1
L5            330 SEA ABB=ON  PLU=ON  L3 AND NC=2
L6            305 SEA ABB=ON  PLU=ON  L4 AND NA>0
L7             25 SEA ABB=ON  PLU=ON  L4 NOT L6
L8                STRUCTURE UPLOADED
L9              4 SEA SUB=L3 SSS SAM L8
                  D SCA
                  D STAT QUE L9
L10            79 SEA SUB=L3 SSS FUL L8
                  SAVE TEMP L10 KRI613STRA/A

     FILE 'CAPLUS' ENTERED AT 12:08:56 ON 22 FEB 2006
L11            33 SEA ABB=ON  PLU=ON  L10

     FILE 'REGISTRY' ENTERED AT 12:09:09 ON 22 FEB 2006

     FILE 'STNGUIDE' ENTERED AT 12:09:47 ON 22 FEB 2006

     FILE 'REGISTRY' ENTERED AT 12:11:05 ON 22 FEB 2006
L12               STRUCTURE UPLOADED
L13            11 SEA SUB=L3 SSS SAM L12
                  D STAT QUE L13
L14           226 SEA SUB=L3 SSS FUL L12
                  SAVE TEMP L14 KRI613STRC/A
L15            60 SEA ABB=ON  PLU=ON  L14 AND NC>1
L16            60 SEA ABB=ON  PLU=ON  L15 AND NA>0
L17            60 SEA ABB=ON  PLU=ON  L16 AND NC=2
L18               STRUCTURE UPLOADED
L19             4 SEA SUB=L3 SSS SAM L18
L20            79 SEA SUB=L3 SSS FUL L18
                  SAVE TEMP L20 KRI613STRD/A

     FILE 'CAPLUS' ENTERED AT 12:36:19 ON 22 FEB 2006
L21            33 SEA ABB=ON  PLU=ON  L20
L22             9 SEA ABB=ON  PLU=ON  L2 (L) (THU OR DMA OR PAC OR PKT OR
                  BAC)/RL
                  D SCA TI L22
L23            25 SEA ABB=ON  PLU=ON  ACHARAN SULFATE/OBI
L24             2 SEA ABB=ON  PLU=ON  L21 AND L23

     FILE 'REGISTRY' ENTERED AT 12:39:34 ON 22 FEB 2006
                  E ACHARAN/CN
L25             1 SEA ABB=ON  PLU=ON  ACHARAN SULFATE/CN
                  D SCA
L26             1 SEA ABB=ON  PLU=ON  ACHARAN, N-DEACETYL-N-SULFO?/CN
                  D SCA

     FILE 'CAPLUS' ENTERED AT 12:41:43 ON 22 FEB 2006
L27            24 SEA ABB=ON  PLU=ON  L25
L28             5 SEA ABB=ON  PLU=ON  L26
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L29            2 SEA ABB=ON  PLU=ON  L21 AND L27
L30            0 SEA ABB=ON  PLU=ON  L21 AND L28
                 E US2004-786613/APPS
L31            1 SEA ABB=ON  PLU=ON  US2004-786613/AP
                 SEL RN

     FILE 'REGISTRY' ENTERED AT 12:44:41 ON 22 FEB 2006
L32            1 SEA ABB=ON  PLU=ON  192662-57-0/BI
                 D SCA

     FILE 'CAPLUS' ENTERED AT 12:45:30 ON 22 FEB 2006
                 D IALL L31
                 E CANCER+ALL/CT
                 E E2
L33           28 SEA ABB=ON  PLU=ON  ACHARAN?/BI
L34           51 SEA ABB=ON  PLU=ON  ?ACHARAN?/BI
L35           23 SEA ABB=ON  PLU=ON  L34 NOT L33
                 D SCA

     FILE 'REGISTRY' ENTERED AT 12:52:37 ON 22 FEB 2006
                 E ACHARAN/CN

     FILE 'CAPLUS' ENTERED AT 12:53:13 ON 22 FEB 2006
L36           28 SEA ABB=ON  PLU=ON  L33 OR L27 OR L28 OR L23
                 SAVE TEMP L36 KRI613ACHA/A

     FILE 'REGISTRY' ENTERED AT 12:55:22 ON 22 FEB 2006
                 SAVE TEMP L17 KRI613MONO/A

     FILE 'CAPLUS' ENTERED AT 12:56:43 ON 22 FEB 2006
                 SAVE TEMP L31 KRI613APP/A

     FILE 'REGISTRY' ENTERED AT 12:57:46 ON 22 FEB 2006
                 D SCA L32

     FILE 'CAPLUS' ENTERED AT 12:57:54 ON 22 FEB 2006
L*** DEL       24 S L32

     FILE 'STNGUIDE' ENTERED AT 12:58:58 ON 22 FEB 2006
                 D SAV

     FILE 'STNGUIDE' ENTERED AT 12:59:48 ON 22 FEB 2006

     FILE 'EMBASE' ENTERED AT 13:09:20 ON 22 FEB 2006
                 E NEOPLASM+ALL/CT
                 E ANGIOGENESIS INHIBITOR+ALL/CT
                 E ANTITUMOR AGENT+ALL/CT
                 E E2+ALL

     FILE 'MEDLINE' ENTERED AT 13:12:51 ON 22 FEB 2006
                 E ANTITUMOR AGENTS/CT
                 E ANTITUMOR AGENTS+ALL/CT
                 E E2=ALL
                 E ANTITUMOR AGENTS+ALL/CT
                 E E2+ALL
                 E E1+ALL/CT

     FILE 'STNGUIDE' ENTERED AT 13:13:44 ON 22 FEB 2006

     FILE 'CAPLUS' ENTERED AT 13:14:00 ON 22 FEB 2006
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                E NEOPLASMS+ALL/CT

     FILE 'STNGUIDE' ENTERED AT 13:16:47 ON 22 FEB 2006

     FILE 'CAPLUS' ENTERED AT 13:17:00 ON 22 FEB 2006
                E ANGIGENESIS INHIBITORS+ALL/CT
                E ANGIOGENESIS INHIBITORS+ALL/CT
                E E10+ALL

     FILE 'STNGUIDE' ENTERED AT 13:18:24 ON 22 FEB 2006

     FILE 'CAPLUS' ENTERED AT 14:33:01 ON 22 FEB 2006
L37       304372 SEA ABB=ON  PLU=ON  ?CANCER?/BI
L38       526763 SEA ABB=ON  PLU=ON  ?TUMOR?/BI
L39         3949 SEA ABB=ON  PLU=ON  ?TUMOUR?/BI
L40        49768 SEA ABB=ON  PLU=ON  ?SARCOMA?/BI
L41       444230 SEA ABB=ON  PLU=ON  ?NEOPLAS?/BI
L42       251331 SEA ABB=ON  PLU=ON  ?CARCINO?/BI
L43        34965 SEA ABB=ON  PLU=ON  ?ANGIOGEN?/BI
L44            7 SEA ABB=ON  PLU=ON  (L37 OR L38 OR L39 OR L40 OR L41 OR L42)
                  AND (L21 OR L22 OR L36)
L45            4 SEA ABB=ON  PLU=ON  L43 AND (L21 OR L22 OR L36)
L46          422 SEA ABB=ON  PLU=ON  LINHARDT R?/AU
L47        31492 SEA ABB=ON  PLU=ON  KIM Y?/AU
L48           35 SEA ABB=ON  PLU=ON  L46 AND L47
L49           13 SEA ABB=ON  PLU=ON  L48 AND (L21 OR L22 OR L36)

     FILE 'REGISTRY' ENTERED AT 14:40:58 ON 22 FEB 2006
                SET SMARTSELECT ON
L*** DEL     SEL L20 1- CHEM :      80 TERMS
                SET SMARTSELECT OFF

     FILE 'CAPLUS' ENTERED AT 14:41:10 ON 22 FEB 2006

     FILE 'REGISTRY' ENTERED AT 14:41:10 ON 22 FEB 2006
                SET SMARTSELECT ON
L*** DEL     SEL L25 1- CHEM :       2 TERMS
                SET SMARTSELECT OFF

     FILE 'CAPLUS' ENTERED AT 14:41:11 ON 22 FEB 2006

     FILE 'REGISTRY' ENTERED AT 14:41:11 ON 22 FEB 2006
                SET SMARTSELECT ON
L*** DEL     SEL L26 1- CHEM :       2 TERMS
                SET SMARTSELECT OFF

     FILE 'CAPLUS' ENTERED AT 14:41:12 ON 22 FEB 2006

     FILE 'MEDLINE' ENTERED AT 14:42:30 ON 22 FEB 2006
L50           18 SEA ABB=ON  PLU=ON  ACHARAN?
L51            0 SEA ABB=ON  PLU=ON  L20
L52            0 SEA ABB=ON  PLU=ON  L25
L53            0 SEA ABB=ON  PLU=ON  L26

     FILE 'REGISTRY' ENTERED AT 14:43:49 ON 22 FEB 2006
                SET SMARTSELECT ON
L54             SEL PLU=ON  L20 1- CHEM :      80 TERMS
                SET SMARTSELECT OFF

     FILE 'MEDLINE' ENTERED AT 14:43:56 ON 22 FEB 2006
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L55           0 SEA ABB=ON  PLU=ON  L54

     FILE 'REGISTRY' ENTERED AT 14:44:15 ON 22 FEB 2006
                SET SMARTSELECT ON
L56             SEL PLU=ON  L25 1- CHEM :       2 TERMS
                SET SMARTSELECT OFF

     FILE 'MEDLINE' ENTERED AT 14:44:16 ON 22 FEB 2006
L57          18 SEA ABB=ON  PLU=ON  L56

     FILE 'REGISTRY' ENTERED AT 14:44:25 ON 22 FEB 2006
                SET SMARTSELECT ON
L58             SEL PLU=ON  L26 1- CHEM :       2 TERMS
                SET SMARTSELECT OFF

     FILE 'MEDLINE' ENTERED AT 14:44:26 ON 22 FEB 2006
L59           4 SEA ABB=ON  PLU=ON  L58
L60          18 SEA ABB=ON  PLU=ON  L50 OR L57 OR L59
L61      579828 SEA ABB=ON  PLU=ON  ?CANCER?
L62      790107 SEA ABB=ON  PLU=ON  ?TUMOR?
L63      133927 SEA ABB=ON  PLU=ON  ?TUMOUR?
L64      125245 SEA ABB=ON  PLU=ON  ?SARCOMA?
L65     1548799 SEA ABB=ON  PLU=ON  ?NEOPLAS?
L66      575010 SEA ABB=ON  PLU=ON  ?CARCINO?
L67     1627678 SEA ABB=ON  PLU=ON  NEOPLASMS+NT/CT
L68        3636 SEA ABB=ON  PLU=ON  ANGIOGENESIS INHIBITORS/CT
L69           4 SEA ABB=ON  PLU=ON  L60 AND (L61 OR L62 OR L63 OR L64 OR L65
                OR L66 OR L67 OR L68)
L70          14 SEA ABB=ON  PLU=ON  L60 NOT L69
                D TRIAL 1-14
L71       30590 SEA ABB=ON  PLU=ON  ?ANGIOGEN?
L72           2 SEA ABB=ON  PLU=ON  L60 AND L71
                D TRIAL 1-2
L73         283 SEA ABB=ON  PLU=ON  LINHARDT R?/AU
L74       10317 SEA ABB=ON  PLU=ON  KIM Y?/AU
L75          31 SEA ABB=ON  PLU=ON  L73 AND L74
L76           9 SEA ABB=ON  PLU=ON  L75 AND L60

     FILE 'EMBASE' ENTERED AT 14:51:58 ON 22 FEB 2006
L77          16 SEA ABB=ON  PLU=ON  ACHARAN?
L78           0 SEA ABB=ON  PLU=ON  L20
L79           0 SEA ABB=ON  PLU=ON  L25
L80           0 SEA ABB=ON  PLU=ON  L26

     FILE 'REGISTRY' ENTERED AT 14:52:47 ON 22 FEB 2006
                SET SMARTSELECT ON
L81             SEL PLU=ON  L20 1- CHEM :      80 TERMS
                SET SMARTSELECT OFF

     FILE 'EMBASE' ENTERED AT 14:52:49 ON 22 FEB 2006
L82           0 SEA ABB=ON  PLU=ON  L81

     FILE 'REGISTRY' ENTERED AT 14:52:57 ON 22 FEB 2006
                SET SMARTSELECT ON
L83             SEL PLU=ON  L25 1- CHEM :       2 TERMS
                SET SMARTSELECT OFF

     FILE 'EMBASE' ENTERED AT 14:52:57 ON 22 FEB 2006
L84          16 SEA ABB=ON  PLU=ON  L83
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     FILE 'REGISTRY' ENTERED AT 14:53:04 ON 22 FEB 2006
                SET SMARTSELECT ON
L85             SEL PLU=ON  L26 1- CHEM :       2 TERMS
                SET SMARTSELECT OFF

     FILE 'EMBASE' ENTERED AT 14:53:05 ON 22 FEB 2006
L86           4 SEA ABB=ON  PLU=ON  L85
L87          16 SEA ABB=ON  PLU=ON  L77 OR L84 OR L86
L88      851781 SEA ABB=ON  PLU=ON  ?CANCER?
L89      778474 SEA ABB=ON  PLU=ON  ?TUMOR? OR ?TUMOUR?
L90       90530 SEA ABB=ON  PLU=ON  ?SARCOMA?
L91      230147 SEA ABB=ON  PLU=ON  ?NEOPLAS?
L92      517907 SEA ABB=ON  PLU=ON  ?CARCINO?
L93       34532 SEA ABB=ON  PLU=ON  ?ANGIOGEN?
L94     1349056 SEA ABB=ON  PLU=ON  NEOPLASM+NT/CT
L95        4217 SEA ABB=ON  PLU=ON  ANGIOGENESIS INHIBITOR/CT
L96           4 SEA ABB=ON  PLU=ON  L87 AND (L88 OR L89 OR L90 OR L91 OR L92
                OR L93 OR L94 OR L95)
                D TRIAL 1-4
L97         261 SEA ABB=ON  PLU=ON  LINHARDT R?/AU
L98        8968 SEA ABB=ON  PLU=ON  KIM Y?/AU
L99          21 SEA ABB=ON  PLU=ON  L97 AND L98
L100          7 SEA ABB=ON  PLU=ON  L99 AND (L96 OR L87)

     FILE 'BIOSIS' ENTERED AT 14:57:42 ON 22 FEB 2006
L101         22 SEA ABB=ON  PLU=ON  ACHARAN?
L102          0 SEA ABB=ON  PLU=ON  L20
L103         17 SEA ABB=ON  PLU=ON  L25
L104          1 SEA ABB=ON  PLU=ON  L26

     FILE 'REGISTRY' ENTERED AT 14:58:11 ON 22 FEB 2006
                SET SMARTSELECT ON
L105            SEL PLU=ON  L20 1- CHEM :      80 TERMS
                SET SMARTSELECT OFF

     FILE 'BIOSIS' ENTERED AT 14:58:13 ON 22 FEB 2006
L106          0 SEA ABB=ON  PLU=ON  L105

     FILE 'REGISTRY' ENTERED AT 14:58:21 ON 22 FEB 2006
                SET SMARTSELECT ON
L107            SEL PLU=ON  L25 1- CHEM :       2 TERMS
                SET SMARTSELECT OFF

     FILE 'BIOSIS' ENTERED AT 14:58:22 ON 22 FEB 2006
L108         21 SEA ABB=ON  PLU=ON  L107

     FILE 'REGISTRY' ENTERED AT 14:58:29 ON 22 FEB 2006
                SET SMARTSELECT ON
L109            SEL PLU=ON  L26 1- CHEM :       2 TERMS
                SET SMARTSELECT OFF

     FILE 'BIOSIS' ENTERED AT 14:58:30 ON 22 FEB 2006
L110          4 SEA ABB=ON  PLU=ON  L109
L111         22 SEA ABB=ON  PLU=ON  L101 OR L103 OR L104 OR L108 OR L110
L112     546518 SEA ABB=ON  PLU=ON  ?CANCER?
L113     976062 SEA ABB=ON  PLU=ON  ?TUMOR? OR ?TUMOUR?
L114      95426 SEA ABB=ON  PLU=ON  ?SARCOMA?
L115     759144 SEA ABB=ON  PLU=ON  ?NEOPLAS?
L116     507193 SEA ABB=ON  PLU=ON  ?CARCINO?
L117      35893 SEA ABB=ON  PLU=ON  ?ANGIOGEN?
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```
                E NEOPLASM+ALL/CT
                E E3+ALL
L118            4 SEA ABB=ON  PLU=ON  L111 AND (L112 OR L113 OR L114 OR L115 OR
                  L116 OR L117)
L119           18 SEA ABB=ON  PLU=ON  L111 NOT L118
L120          359 SEA ABB=ON  PLU=ON  LINHARDT R?/AU
L121        15625 SEA ABB=ON  PLU=ON  KIM Y?/AU
L122           40 SEA ABB=ON  PLU=ON  L120 AND L121
L123           11 SEA ABB=ON  PLU=ON  L122 AND (L111 OR L118)

     FILE 'USPATFULL' ENTERED AT 15:05:15 ON 22 FEB 2006
L124            1 SEA ABB=ON  PLU=ON  L20
L125            2 SEA ABB=ON  PLU=ON  L25
L126            1 SEA ABB=ON  PLU=ON  L26

     FILE 'REGISTRY' ENTERED AT 15:06:18 ON 22 FEB 2006
                SET SMARTSELECT ON
L127            SEL PLU=ON  L20 1- CHEM :      80 TERMS
                SET SMARTSELECT OFF

     FILE 'USPATFULL' ENTERED AT 15:06:20 ON 22 FEB 2006
L128            0 SEA ABB=ON  PLU=ON  L127

     FILE 'REGISTRY' ENTERED AT 15:06:30 ON 22 FEB 2006
                SET SMARTSELECT ON
L129            SEL PLU=ON  L25 1- CHEM :       2 TERMS
                SET SMARTSELECT OFF

     FILE 'USPATFULL' ENTERED AT 15:06:30 ON 22 FEB 2006
L130            4 SEA ABB=ON  PLU=ON  L129

     FILE 'REGISTRY' ENTERED AT 15:06:36 ON 22 FEB 2006
                SET SMARTSELECT ON
L131            SEL PLU=ON  L26 1- CHEM :       2 TERMS
                SET SMARTSELECT OFF

     FILE 'USPATFULL' ENTERED AT 15:06:36 ON 22 FEB 2006
L132            1 SEA ABB=ON  PLU=ON  L131
L133            4 SEA ABB=ON  PLU=ON  ACHARAN?
L134            5 SEA ABB=ON  PLU=ON  L124 OR L125 OR L126 OR L130 OR L132 OR
                  L133
L135       120107 SEA ABB=ON  PLU=ON  ?CANCER?
L136       104777 SEA ABB=ON  PLU=ON  ?TUMOR?
L137        12054 SEA ABB=ON  PLU=ON  ?TUMOUR?
L138        34800 SEA ABB=ON  PLU=ON  ?SARCOMA?
L139        37564 SEA ABB=ON  PLU=ON  ?NEOPLAS?
L140        67199 SEA ABB=ON  PLU=ON  ?CARCINO?
L141        22227 SEA ABB=ON  PLU=ON  ?ANGIOGEN?
L142            4 SEA ABB=ON  PLU=ON  L134 AND (L135 OR L136 OR L137 OR L138 OR
                  L139 OR L140 OR L141)
L143            1 SEA ABB=ON  PLU=ON  L134 NOT L142
                  D SCA
L144           28 SEA ABB=ON  PLU=ON  LINHARDT R?/AU
L145         4380 SEA ABB=ON  PLU=ON  KIM Y?/AU
L146            2 SEA ABB=ON  PLU=ON  L144 AND L145
L147            2 SEA ABB=ON  PLU=ON  L146 AND L142

     FILE 'STNGUIDE' ENTERED AT 15:11:50 ON 22 FEB 2006

     FILE 'REGISTRY' ENTERED AT 15:13:00 ON 22 FEB 2006
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```
L*** DEL       0 S L20 AND RELATED POLYMERS/FA
L*** DEL       0 S L***
L148          79 POLYLINK L20
L149           0 SEA ABB=ON  PLU=ON  L148 NOT L20

     FILE 'STNGUIDE' ENTERED AT 15:14:33 ON 22 FEB 2006

     FILE 'REGISTRY' ENTERED AT 15:14:46 ON 22 FEB 2006
                D STAT QUE L17
                D STAT QUE L20
                D QUE NOS L149

     FILE 'STNGUIDE' ENTERED AT 15:15:59 ON 22 FEB 2006

     FILE 'WPIX' ENTERED AT 15:20:01 ON 22 FEB 2006
L150           0 SEA SSS SAM L18
L151           1 SEA SSS FUL L18

     FILE 'STNGUIDE' ENTERED AT 15:20:34 ON 22 FEB 2006

     FILE 'WPIX' ENTERED AT 15:22:23 ON 22 FEB 2006
L152           1 SEA ABB=ON  PLU=ON  L151/DCR
L153          28 SEA ABB=ON  PLU=ON  LINHARDT R?/AU
L154       28293 SEA ABB=ON  PLU=ON  KIM Y?/AU
L155           2 SEA ABB=ON  PLU=ON  L153 AND L154
L156           5 SEA ABB=ON  PLU=ON  ACHARAN?
L157      119623 SEA ABB=ON  PLU=ON  (L135 OR L136 OR L137 OR L138 OR L139 OR
                L140 OR L141)
L158           0 SEA ABB=ON  PLU=ON  L152 AND L157
L159           3 SEA ABB=ON  PLU=ON  L156 AND L157
L160           2 SEA ABB=ON  PLU=ON  L155 AND (L152 OR L156)

     FILE 'STNGUIDE' ENTERED AT 15:25:47 ON 22 FEB 2006

     FILE 'CAPLUS' ENTERED AT 15:30:55 ON 22 FEB 2006
                D QUE NOS L48
                D QUE NOS L49
L161          35 SEA ABB=ON  PLU=ON  (L48 OR L49)

     FILE 'MEDLINE' ENTERED AT 15:30:58 ON 22 FEB 2006
                D QUE NOS L75
                D QUE NOS L76
L162          31 SEA ABB=ON  PLU=ON  (L75 OR L76)

     FILE 'EMBASE' ENTERED AT 15:31:01 ON 22 FEB 2006
                D QUE NOS L99
                D QUE NOS L100
L163          21 SEA ABB=ON  PLU=ON  (L99 OR L100)

     FILE 'BIOSIS' ENTERED AT 15:31:04 ON 22 FEB 2006
                D QUE NOS L122
                D QUE NOS L123
L164          40 SEA ABB=ON  PLU=ON  (L122 OR L123)

     FILE 'WPIX' ENTERED AT 15:31:07 ON 22 FEB 2006
                D QUE NOS L155
                D QUE NOS L160
L165           2 SEA ABB=ON  PLU=ON  L155 OR L160

     FILE 'USPATFULL' ENTERED AT 15:31:11 ON 22 FEB 2006
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                D QUE NOS L146
                D QUE NOS L147
L166          2 SEA ABB=ON  PLU=ON  L146 OR L147

      FILE 'STNGUIDE' ENTERED AT 15:31:22 ON 22 FEB 2006

      FILE 'CAPLUS, MEDLINE, EMBASE, BIOSIS, WPIX, USPATFULL' ENTERED AT
      15:32:34 ON 22 FEB 2006
L167         47 DUP REM L161 L162 L163 L164 L165 L166 (84 DUPLICATES REMOVED)
                    ANSWERS '1-35' FROM FILE CAPLUS
                    ANSWERS '36-37' FROM FILE MEDLINE
                    ANSWERS '38-46' FROM FILE BIOSIS
                    ANSWER '47' FROM FILE USPATFULL
                D IBIB ABS HITIND HITSTR L167 1-35
                D IALL L167 36-46
                D IBIB ABS KWIC HITSTR L167 47

      FILE 'STNGUIDE' ENTERED AT 15:34:54 ON 22 FEB 2006

      FILE 'CAPLUS' ENTERED AT 15:40:05 ON 22 FEB 2006
                D QUE NOS L44
                D QUE NOS L45
L168          4 SEA ABB=ON  PLU=ON  ((L44 OR L45)) NOT L161

      FILE 'MEDLINE' ENTERED AT 15:40:08 ON 22 FEB 2006
                D QUE NOS L51
                D QUE NOS L52
                D QUE NOS L53
                D QUE NOS L55
                D QUE NOS L69
                D QUE NOS L72
L169          3 SEA ABB=ON  PLU=ON  ((L51 OR L52 OR L53) OR L55 OR L69 OR L72)
                NOT L162

      FILE 'EMBASE' ENTERED AT 15:40:14 ON 22 FEB 2006
                D QUE NOS L78
                D QUE NOS L79
                D QUE NOS L80
                D QUE NOS L82
                D QUE NOS L96
L170          2 SEA ABB=ON  PLU=ON  (L78 OR L79 OR L80 OR L82 OR L96) NOT L163


      FILE 'BIOSIS' ENTERED AT 15:40:19 ON 22 FEB 2006
                D QUE NOS L102
                D QUE NOS L106
                D QUE NOS L118
L171          2 SEA ABB=ON  PLU=ON  (L102 OR L106 OR L118) NOT L164

      FILE 'WPIX' ENTERED AT 15:40:23 ON 22 FEB 2006
                D QUE NOS L159
                D QUE NOS L152
                D QUE NOS L158
L172          2 SEA ABB=ON  PLU=ON  (L159 OR L152 OR L158) NOT L165

      FILE 'USPATFULL' ENTERED AT 15:40:28 ON 22 FEB 2006
                D QUE NOS L128
                D QUE NOS L142
L173          2 SEA ABB=ON  PLU=ON  (L128 OR L142) NOT L166
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FILE 'STNGUIDE' ENTERED AT 15:40:45 ON 22 FEB 2006

FILE 'CAPLUS, MEDLINE, EMBASE, BIOSIS, WPIX, USPATFULL' ENTERED AT
15:42:45 ON 22 FEB 2006
L174          8 DUP REM L168 L169 L170 L171 L172 L173 (7 DUPLICATES REMOVED)
                ANSWERS '1-4' FROM FILE CAPLUS
                ANSWER '5' FROM FILE MEDLINE
                ANSWER '6' FROM FILE WPIX
                ANSWERS '7-8' FROM FILE USPATFULL
              D IBIB ABS HITIND HITSTR L174 1-4
              D IALL L174 5
              D IBIB ABS HITSTR L174 6
              D IBIB ABS KWIC HITSTR L174 7-8


FILE HOME

FILE REGISTRY
Property values tagged with IC are from the ZIC/VINITI data file
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STRUCTURE FILE UPDATES:   20 FEB 2006  HIGHEST RN 874742-76-4
DICTIONARY FILE UPDATES:  20 FEB 2006  HIGHEST RN 874742-76-4

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*                                                               *
* The CA roles and document type information have been removed from *
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*                                                               *
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FILE COVERS 1907 - 22 Feb 2006 VOL 144 ISS 9
FILE LAST UPDATED: 21 Feb 2006 (20060221/ED)

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FILE STNGUIDE
FILE CONTAINS CURRENT INFORMATION.
LAST RELOADED: Feb 17, 2006 (20060217/UP).

FILE EMBASE
FILE COVERS 1974 TO 20 Feb 2006 (20060220/ED)

EMBASE has been reloaded. Enter HELP RLOAD for details.

This file contains CAS Registry Numbers for easy and accurate
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FILE MEDLINE
FILE LAST UPDATED: 21 FEB 2006 (20060221/UP). FILE COVERS 1950 TO DATE.

On December 11, 2005, the 2006 MeSH terms were loaded.

The MEDLINE reload for 2006 will soon be available. For details
on the 2005 reload, enter HELP RLOAD at an arrow promt (=>).
See also:

http://www.nlm.nih.gov/mesh/
http://www.nlm.nih.gov/pubs/techbull/nd04/nd04_mesh.html
http://www.nlm.nih.gov/pubs/techbull/nd05/nd05_med_data_changes.html
http://www.nlm.nih.gov/pubs/techbull/nd05/nd05_2006_MeSH.html

OLDMEDLINE is covered back to 1950.

MEDLINE thesauri in the /CN, /CT, and /MN fields incorporate the
MeSH 2006 vocabulary.

This file contains CAS Registry Numbers for easy and accurate

FILE BIOSIS
FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 15 February 2006 (20060215/ED)

FILE USPATFULL
FILE COVERS 1971 TO PATENT PUBLICATION DATE: 21 Feb 2006 (20060221/PD)
FILE LAST UPDATED: 21 Feb 2006 (20060221/ED)
HIGHEST GRANTED PATENT NUMBER: US7003800
HIGHEST APPLICATION PUBLICATION NUMBER: US2006037120
CA INDEXING IS CURRENT THROUGH 21 Feb 2006 (20060221/UPCA)
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 21 Feb 2006 (20060221/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Dec 2005
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Dec 2005

FILE WPIX
FILE LAST UPDATED: 17 FEB 2006 <20060217/UP>
MOST RECENT DERWENT UPDATE: 200612 <200612/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

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http://www.stn-international.de/stndatabases/details/ipc_reform.html and
http://scientific.thomson.com/media/scpdf/ipcrdwpi.pdf <<<

=>

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```
=> file registry
FILE 'REGISTRY' ENTERED AT 15:14:46 ON 22 FEB 2006
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Property values tagged with IC are from the ZIC/VINITI data file
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STRUCTURE FILE UPDATES:   21 FEB 2006  HIGHEST RN 874882-62-9
DICTIONARY FILE UPDATES:  21 FEB 2006  HIGHEST RN 874882-62-9

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH January 6, 2006

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

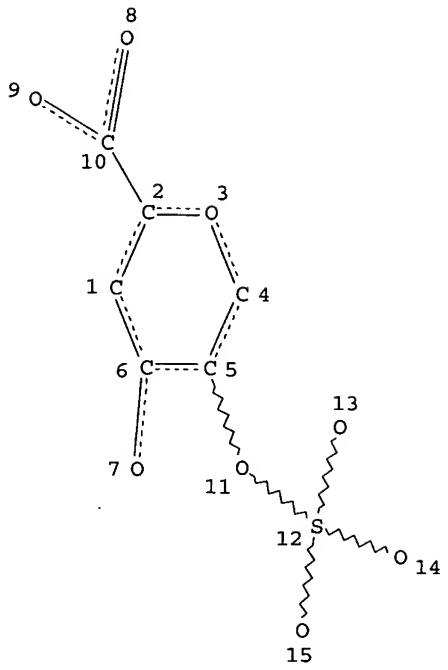
*************************************************************************
*                                                                       *
* The CA roles and document type information have been removed from     *
* the IDE default display format and the ED field has been added,       *
* effective March 20, 2005.  A new display format, IDERL, is now        *
* available and contains the CA role and document type information.     *
*                                                                       *
*************************************************************************

Structure search iteration limits have been increased.  See HELP SLIMITS
for details.

REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document.  For information
on property searching in REGISTRY, refer to:

http://www.cas.org/ONLINE/UG/regprops.html

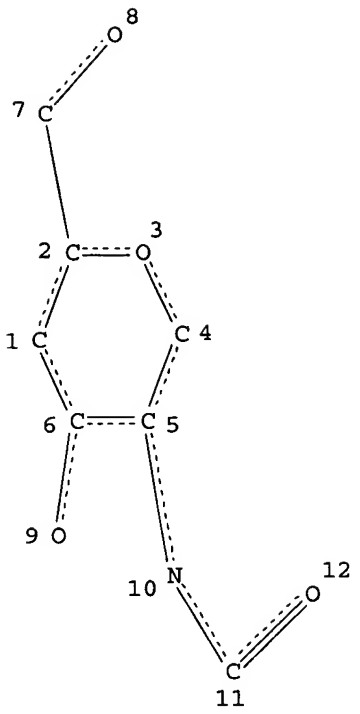
=> d stat que L17
L1              STR
```



NODE ATTRIBUTES:
NSPEC IS R AT 1
NSPEC IS R AT 2
NSPEC IS R AT 3
NSPEC IS R AT 4
NSPEC IS R AT 5
NSPEC IS R AT 6
NSPEC IS C AT 7
NSPEC IS C AT 8
NSPEC IS C AT 9
NSPEC IS C AT 10
NSPEC IS C AT 11
NSPEC IS C AT 12
NSPEC IS C AT 13
NSPEC IS C AT 14
NSPEC IS C AT 15
CONNECT IS E3 RC AT 10
DEFAULT MLEVEL IS ATOM
MLEVEL IS CLASS AT 7 8 9 10 11 12 13 14 15
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE
L3 1062 SEA FILE=REGISTRY SSS FUL L1 ← registry #s that contain the Sulfur-containing 1/2 of the repeating unit.
L12 STR




```
NODE ATTRIBUTES:
NSPEC    IS R       AT    1
NSPEC    IS R       AT    2
NSPEC    IS R       AT    3
NSPEC    IS R       AT    4
NSPEC    IS R       AT    5
NSPEC    IS R       AT    6
NSPEC    IS C       AT    7
NSPEC    IS C       AT    8
NSPEC    IS C       AT    9
NSPEC    IS C       AT   10
NSPEC    IS C       AT   11
NSPEC    IS C       AT   12
DEFAULT MLEVEL IS ATOM
MLEVEL   IS CLASS   AT    7   8   9 10 11 12
DEFAULT ECLEVEL IS LIMITED

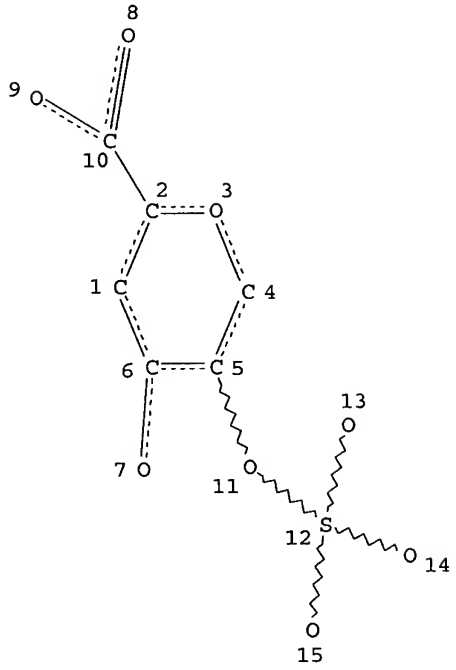
GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS  12

STEREO ATTRIBUTES: NONE
L14          226 SEA FILE=REGISTRY SUB=L3 SSS FUL L12
L15           60 SEA FILE=REGISTRY ABB=ON  PLU=ON  L14 AND NC>1
L16           60 SEA FILE=REGISTRY ABB=ON  PLU=ON  L15 AND NA>0
L17           60 SEA FILE=REGISTRY ABB=ON  PLU=ON  L16 AND NC=2


=> d stat que L20
L1              STR
```

← registry numbers that contain both halves of the containing unit

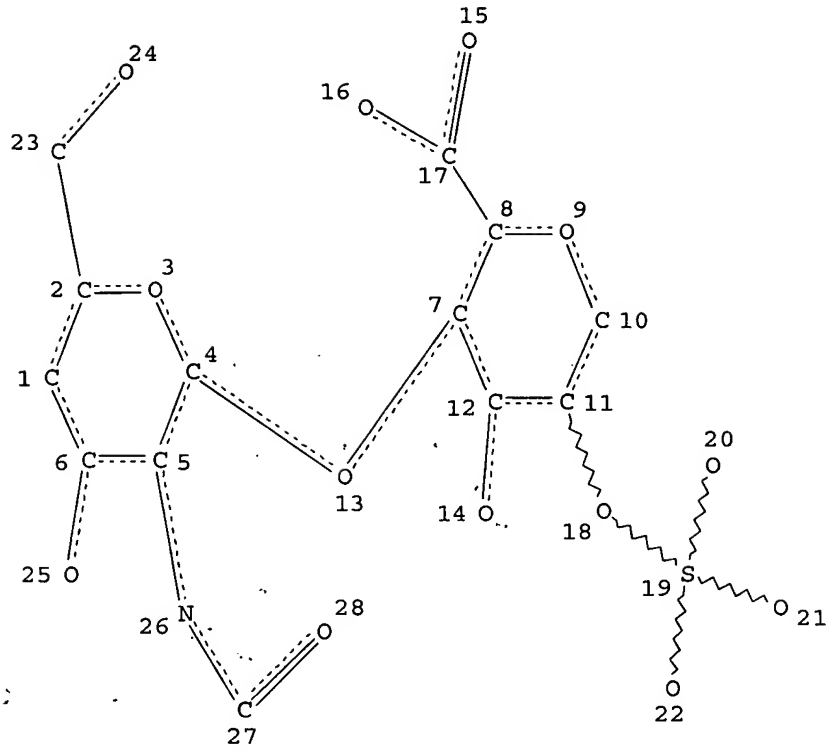
query logic shows that all entries that contain 2 components contain sodium not 2 monomer units.



NODE ATTRIBUTES:
NSPEC IS R AT 1
NSPEC IS R AT 2
NSPEC IS R AT 3
NSPEC IS R AT 4
NSPEC IS R AT 5
NSPEC IS R AT 6
NSPEC IS C AT 7
NSPEC IS C AT 8
NSPEC IS C AT 9
NSPEC IS C AT 10
NSPEC IS C AT 11
NSPEC IS C AT 12
NSPEC IS C AT 13
NSPEC IS C AT 14
NSPEC IS C AT 15
CONNECT IS E3 RC AT 10
DEFAULT MLEVEL IS ATOM
MLEVEL IS CLASS AT 7 8 9 10 11 12 13 14 15
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE
L3 1062 SEA FILE=REGISTRY SSS FUL L1
L18 STR



NODE ATTRIBUTES:

NSPEC	IS	R	AT	1
NSPEC	IS	R	AT	2
NSPEC	IS	R	AT	3
NSPEC	IS	R	AT	4
NSPEC	IS	R	AT	5
NSPEC	IS	R	AT	6
NSPEC	IS	R	AT	7
NSPEC	IS	R	AT	8
NSPEC	IS	R	AT	9
NSPEC	IS	R	AT	10
NSPEC	IS	R	AT	11
NSPEC	IS	R	AT	12
NSPEC	IS	C	AT	13
NSPEC	IS	C	AT	14
NSPEC	IS	C	AT	15
NSPEC	IS	C	AT	16
NSPEC	IS	C	AT	17
NSPEC	IS	C	AT	18
NSPEC	IS	C	AT	19
NSPEC	IS	C	AT	20
NSPEC	IS	C	AT	21
NSPEC	IS	C	AT	22
NSPEC	IS	C	AT	23
NSPEC	IS	C	AT	24
NSPEC	IS	C	AT	25
NSPEC	IS	C	AT	26
NSPEC	IS	C	AT	27
NSPEC	IS	C	AT	28
CONNECT	IS	E3 RC	AT	17

```
DEFAULT MLEVEL IS ATOM
MLEVEL  IS CLASS  AT  13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS  28

STEREO ATTRIBUTES: NONE
L20          79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18

100.0% PROCESSED     199 ITERATIONS                          79 ANSWERS
SEARCH TIME: 00.00.01
```

79 registry numbers have the 2 "monomers" attached to each other

```
=> d que nos L149
L1              STR
L3          1062 SEA FILE=REGISTRY SSS FUL L1
L18             STR
L20           79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L148          79 SEA FILE=REGISTRY POLYLINK L20
L149           0 SEA FILE=REGISTRY ABB=ON  PLU=ON  L148 NOT L20
```

query logic shows that L20=L148

```
=> => => file caplus
FILE 'CAPLUS' ENTERED AT 15:30:55 ON 22 FEB 2006
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FILE COVERS 1907 - 22 Feb 2006  VOL 144 ISS 9
FILE LAST UPDATED: 21 Feb 2006  (20060221/ED)

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http://www.cas.org/infopolicy.html
'OBI' IS DEFAULT SEARCH FIELD FOR 'CAPLUS' FILE
```

AUTHOR SEARCH

```
=> d que nos L48

L46           422 SEA FILE=CAPLUS ABB=ON  PLU=ON  LINHARDT R?/AU
L47         31492 SEA FILE=CAPLUS ABB=ON  PLU=ON  KIM Y?/AU
L48            35 SEA FILE=CAPLUS ABB=ON  PLU=ON  L46 AND L47
```

(structure hits ~~will~~ or RNs will show if present)

```
=> d que nos L49
```

```
L1              STR
L2           50 SEA FILE=REGISTRY SSS SAM L1
L3         1062 SEA FILE=REGISTRY SSS FUL L1
L18             STR
L20          79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L21          33 SEA FILE=CAPLUS ABB=ON  PLU=ON  L20
L22           9 SEA FILE=CAPLUS ABB=ON  PLU=ON  L2 (L) (THU OR DMA OR PAC OR
                PKT OR BAC)/RL
L23          25 SEA FILE=CAPLUS ABB=ON  PLU=ON  ACHARAN SULFATE/OBI
L25           1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN SULFATE/CN
L26           1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN, N-DEACETYL-N-SULFO?/
                CN
L27          24 SEA FILE=CAPLUS ABB=ON  PLU=ON  L25
L28           5 SEA FILE=CAPLUS ABB=ON  PLU=ON  L26
L33          28 SEA FILE=CAPLUS ABB=ON  PLU=ON  ACHARAN?/BI
L36          28 SEA FILE=CAPLUS ABB=ON  PLU=ON  L33 OR L27 OR L28 OR L23
L46         422 SEA FILE=CAPLUS ABB=ON  PLU=ON  LINHARDT R?/AU
L47       31492 SEA FILE=CAPLUS ABB=ON  PLU=ON  KIM Y?/AU
L48          35 SEA FILE=CAPLUS ABB=ON  PLU=ON  L46 AND L47
L49          13 SEA FILE=CAPLUS ABB=ON  PLU=ON  L48 AND (L21 OR L22 OR L36)


=> s L48-L49

L161        35 (L48 OR L49)

=> file medline

FILE 'MEDLINE' ENTERED AT 15:30:58 ON 22 FEB 2006

 FILE LAST UPDATED: 21 FEB 2006 (20060221/UP).  FILE COVERS 1950 TO DATE.

 On December 11, 2005, the 2006 MeSH terms were loaded.

 The MEDLINE reload for 2006 will soon be available.  For details
 on the 2005 reload, enter HELP RLOAD at an arrow promt (=>).
 See also:

    http://www.nlm.nih.gov/mesh/
    http://www.nlm.nih.gov/pubs/techbull/nd04/nd04_mesh.html
    http://www.nlm.nih.gov/pubs/techbull/nd05/nd05_med_data_changes.html
    http://www.nlm.nih.gov/pubs/techbull/nd05/nd05_2006_MeSH.html

 OLDMEDLINE is covered back to 1950.

 MEDLINE thesauri in the /CN, /CT, and /MN fields incorporate the
 MeSH 2006 vocabulary.

 This file contains CAS Registry Numbers for easy and accurate

=> d que nos L75

L73         283 SEA FILE=MEDLINE ABB=ON  PLU=ON  LINHARDT R?/AU
L74       10317 SEA FILE=MEDLINE ABB=ON  PLU=ON  KIM Y?/AU
L75          31 SEA FILE=MEDLINE ABB=ON  PLU=ON  L73 AND L74


=> d que nos L76

L25           1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN SULFATE/CN
```

```
L26           1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN, N-DEACETYL-N-SULFO?/
                CN
L50          18 SEA FILE=MEDLINE ABB=ON  PLU=ON  ACHARAN?
L56             SEL  PLU=ON  L25 1- CHEM :       2 TERMS
L57          18 SEA FILE=MEDLINE ABB=ON  PLU=ON  L56
L58             SEL  PLU=ON  L26 1- CHEM :       2 TERMS
L59           4 SEA FILE=MEDLINE ABB=ON  PLU=ON  L58
L60          18 SEA FILE=MEDLINE ABB=ON  PLU=ON  L50 OR L57 OR L59
L73         283 SEA FILE=MEDLINE ABB=ON  PLU=ON  LINHARDT R?/AU
L74       10317 SEA FILE=MEDLINE ABB=ON  PLU=ON  KIM Y?/AU
L75          31 SEA FILE=MEDLINE ABB=ON  PLU=ON  L73 AND L74
L76           9 SEA FILE=MEDLINE ABB=ON  PLU=ON  L75 AND L60


=> s L75-L76

L162        31 (L75 OR L76)

=> file embase

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 FILE COVERS 1974 TO 20 Feb 2006 (20060220/ED)

 EMBASE has been reloaded. Enter HELP RLOAD for details.

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

=> d que nos L99

L97         261 SEA FILE=EMBASE ABB=ON  PLU=ON  LINHARDT R?/AU
L98        8968 SEA FILE=EMBASE ABB=ON  PLU=ON  KIM Y?/AU
L99          21 SEA FILE=EMBASE ABB=ON  PLU=ON  L97 AND L98


=> d que nos L100

L25           1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN SULFATE/CN
L26           1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN, N-DEACETYL-N-SULFO?/
                CN
L77          16 SEA FILE=EMBASE ABB=ON  PLU=ON  ACHARAN?
L83             SEL  PLU=ON  L25 1- CHEM :       2 TERMS
L84          16 SEA FILE=EMBASE ABB=ON  PLU=ON  L83
L85             SEL  PLU=ON  L26 1- CHEM :       2 TERMS
L86           4 SEA FILE=EMBASE ABB=ON  PLU=ON  L85
L87          16 SEA FILE=EMBASE ABB=ON  PLU=ON  L77 OR L84 OR L86
L88      851781 SEA FILE=EMBASE ABB=ON  PLU=ON  ?CANCER?
L89      778474 SEA FILE=EMBASE ABB=ON  PLU=ON  ?TUMOR? OR ?TUMOUR?
L90       90530 SEA FILE=EMBASE ABB=ON  PLU=ON  ?SARCOMA?
L91      230147 SEA FILE=EMBASE ABB=ON  PLU=ON  ?NEOPLAS?
L92      517907 SEA FILE=EMBASE ABB=ON  PLU=ON  ?CARCINO?
L93       34532 SEA FILE=EMBASE ABB=ON  PLU=ON  ?ANGIOGEN?
L94     1349056 SEA FILE=EMBASE ABB=ON  PLU=ON  NEOPLASM+NT/CT
L95        4217 SEA FILE=EMBASE ABB=ON  PLU=ON  ANGIOGENESIS INHIBITOR/CT
L96           4 SEA FILE=EMBASE ABB=ON  PLU=ON  L87 AND (L88 OR L89 OR L90 OR
                L91 OR L92 OR L93 OR L94 OR L95)
L97         261 SEA FILE=EMBASE ABB=ON  PLU=ON  LINHARDT R?/AU
L98        8968 SEA FILE=EMBASE ABB=ON  PLU=ON  KIM Y?/AU
```

```
L99          21 SEA FILE=EMBASE ABB=ON  PLU=ON  L97 AND L98
L100          7 SEA FILE=EMBASE ABB=ON  PLU=ON  L99 AND (L96 OR L87)


=> s L99-L100

L163        21 (L99 OR L100)

=> file biosis

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CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 15 February 2006 (20060215/ED)


=> d que nos L122

L120        359 SEA FILE=BIOSIS ABB=ON  PLU=ON  LINHARDT R?/AU
L121      15625 SEA FILE=BIOSIS ABB=ON  PLU=ON  KIM Y?/AU
L122         40 SEA FILE=BIOSIS ABB=ON  PLU=ON  L120 AND L121


=> d que nos L123

L25           1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN SULFATE/CN
L26           1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN, N-DEACETYL-N-SULFO?/
                CN
L101         22 SEA FILE=BIOSIS ABB=ON  PLU=ON  ACHARAN?
L103         17 SEA FILE=BIOSIS ABB=ON  PLU=ON  L25
L104          1 SEA FILE=BIOSIS ABB=ON  PLU=ON  L26
L107            SEL  PLU=ON  L25 1- CHEM :       2 TERMS
L108         21 SEA FILE=BIOSIS ABB=ON  PLU=ON  L107
L109            SEL  PLU=ON  L26 1- CHEM :       2 TERMS
L110          4 SEA FILE=BIOSIS ABB=ON  PLU=ON  L109
L111         22 SEA FILE=BIOSIS ABB=ON  PLU=ON  L101 OR L103 OR L104 OR L108
                OR L110
L112     546518 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?CANCER?
L113     976062 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?TUMOR? OR ?TUMOUR?
L114      95426 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?SARCOMA?
L115     759144 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?NEOPLAS?
L116     507193 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?CARCINO?
L117      35893 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?ANGIOGEN?
L118          4 SEA FILE=BIOSIS ABB=ON  PLU=ON  L111 AND (L112 OR L113 OR L114
                OR L115 OR L116 OR L117)
L120        359 SEA FILE=BIOSIS ABB=ON  PLU=ON  LINHARDT R?/AU
L121      15625 SEA FILE=BIOSIS ABB=ON  PLU=ON  KIM Y?/AU
L122         40 SEA FILE=BIOSIS ABB=ON  PLU=ON  L120 AND L121
L123         11 SEA FILE=BIOSIS ABB=ON  PLU=ON  L122 AND (L111 OR L118)


=> s L122-L123

L164        40 (L122 OR L123)

=> file wpix
```

```
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MOST RECENT DERWENT UPDATE:     200612        <200612/DW>
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    GUIDES, PLEASE VISIT:
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    DOCUMENTATION NOW AVAILABLE IN DERWENT WORLD PATENTS INDEX
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>>> THE CPI AND EPI MANUAL CODES WILL BE REVISED FROM UPDATE 200601.
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http://scientific.thomson.com/support/patents/dwpiref/reftools/classification

>>> PLEASE BE AWARE OF THE NEW IPC REFORM IN 2006, SEE
http://www.stn-international.de/stndatabases/details/ipc_reform.html  and
http://scientific.thomson.com/media/scpdf/ipcrdwpi.pdf <<<

=> d que nos L155

L153         28 SEA FILE=WPIX ABB=ON  PLU=ON  LINHARDT R?/AU
L154      28293 SEA FILE=WPIX ABB=ON  PLU=ON  KIM Y?/AU
L155          2 SEA FILE=WPIX ABB=ON  PLU=ON  L153 AND L154


=> d que nos L160

L18             STR
L151          1 SEA FILE=WPIX SSS FUL L18
L152          1 SEA FILE=WPIX ABB=ON  PLU=ON  L151/DCR
L153         28 SEA FILE=WPIX ABB=ON  PLU=ON  LINHARDT R?/AU
L154      28293 SEA FILE=WPIX ABB=ON  PLU=ON  KIM Y?/AU
L155          2 SEA FILE=WPIX ABB=ON  PLU=ON  L153 AND L154
L156          5 SEA FILE=WPIX ABB=ON  PLU=ON  ACHARAN?
L160          2 SEA FILE=WPIX ABB=ON  PLU=ON  L155 AND (L152 OR L156)


=> s L155 or L160

L165         2 L155 OR L160

=> file uspatfull

FILE 'USPATFULL' ENTERED AT 15:31:11 ON 22 FEB 2006
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```

```
FILE COVERS 1971 TO PATENT PUBLICATION DATE: 21 Feb 2006 (20060221/PD)
FILE LAST UPDATED: 21 Feb 2006 (20060221/ED)
HIGHEST GRANTED PATENT NUMBER: US7003800
HIGHEST APPLICATION PUBLICATION NUMBER: US2006037120
CA INDEXING IS CURRENT THROUGH 21 Feb 2006 (20060221/UPCA)
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 21 Feb 2006 (20060221/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Dec 2005
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Dec 2005


=> d que nos L146

L144          28 SEA FILE=USPATFULL ABB=ON  PLU=ON  LINHARDT R?/AU
L145        4380 SEA FILE=USPATFULL ABB=ON  PLU=ON  KIM Y?/AU
L146           2 SEA FILE=USPATFULL ABB=ON  PLU=ON  L144 AND L145


=> d que nos L147

L1               STR
L3            1062 SEA FILE=REGISTRY SSS FUL L1
L18              STR
L20             79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L25              1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN SULFATE/CN
L26              1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN, N-DEACETYL-N-SULFO?/
                   CN
L124             1 SEA FILE=USPATFULL ABB=ON  PLU=ON  L20
L125             2 SEA FILE=USPATFULL ABB=ON  PLU=ON  L25
L126             1 SEA FILE=USPATFULL ABB=ON  PLU=ON  L26
L129               SEL  PLU=ON  L25 1- CHEM :        2 TERMS
L130             4 SEA FILE=USPATFULL ABB=ON  PLU=ON  L129
L131               SEL  PLU=ON  L26 1- CHEM :        2 TERMS
L132             1 SEA FILE=USPATFULL ABB=ON  PLU=ON  L131
L133             4 SEA FILE=USPATFULL ABB=ON  PLU=ON  ACHARAN?
L134             5 SEA FILE=USPATFULL ABB=ON  PLU=ON  L124 OR L125 OR L126 OR
                   L130 OR L132 OR L133
L135        120107 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?CANCER?
L136        104777 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?TUMOR?
L137         12054 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?TUMOUR?
L138         34800 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?SARCOMA?
L139         37564 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?NEOPLAS?
L140         67199 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?CARCINO?
L141         22227 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?ANGIOGEN?
L142             4 SEA FILE=USPATFULL ABB=ON  PLU=ON  L134 AND (L135 OR L136 OR
                   L137 OR L138 OR L139 OR L140 OR L141)
L144            28 SEA FILE=USPATFULL ABB=ON  PLU=ON  LINHARDT R?/AU
L145          4380 SEA FILE=USPATFULL ABB=ON  PLU=ON  KIM Y?/AU
L146             2 SEA FILE=USPATFULL ABB=ON  PLU=ON  L144 AND L145
L147             2 SEA FILE=USPATFULL ABB=ON  PLU=ON  L146 AND L142


=> s L146 or L147

L166           2 L146 OR L147

=> => dup rem L161 L162 L163 L164 L165 L166
FILE 'CAPLUS' ENTERED AT 15:32:34 ON 22 FEB 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
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FILE 'MEDLINE' ENTERED AT 15:32:34 ON 22 FEB 2006

FILE 'EMBASE' ENTERED AT 15:32:34 ON 22 FEB 2006

FILE 'BIOSIS' ENTERED AT 15:32:34 ON 22 FEB 2006

FILE 'WPIX' ENTERED AT 15:32:34 ON 22 FEB 2006

FILE 'USPATFULL' ENTERED AT 15:32:34 ON 22 FEB 2006

PROCESSING COMPLETED FOR L161
PROCESSING COMPLETED FOR L162
PROCESSING COMPLETED FOR L163
PROCESSING COMPLETED FOR L164
PROCESSING COMPLETED FOR L165
PROCESSING COMPLETED FOR L166
L167 47 DUP REM L161 L162 L163 L164 L165 L166 (84 DUPLICATES REMOVED)
ANSWERS '1-35' FROM FILE CAPLUS
ANSWERS '36-37' FROM FILE MEDLINE
ANSWERS '38-46' FROM FILE BIOSIS
ANSWER '47' FROM FILE USPATFULL

=> d ibib abs hitind hitstr L167 1-35; d iall L167 36-46; d ibib abs kwic hitstr L167 47

L167 ANSWER 1 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 2005:87281 CAPLUS
DOCUMENT NUMBER: 142:193004
TITLE: Characterization of heparan sulfate from the unossified antler of Cervus elaphus
AUTHOR(S): Ha, Young Wan; Jeon, Byong Tae; Moon, Sang Ho; Toyoda, Hidenao; Toida, Toshihiko; **Linhardt, Robert J.** ; **Kim, Yeong Shik**
CORPORATE SOURCE: Natural Products Research Institute, College of Pharmacy, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Carbohydrate Research (2005), 340(3), 411-416
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The antler is the most rapidly growing tissue in the animal kingdom. According to previous reports, antler glycosaminoglycans (GAGs) consist of all kinds GAGs except for heparan sulfate (HS). Chondroitin sulfate is the major antler GAG component comprising 88% of the total uronic acid content. In the current study, we have isolated HS from antler for the first time and characterized it based on both NMR spectroscopy and disaccharide composition anal. Antler GAGs were isolated by protease treatment and followed by cetylpyridinium chloride precipitation The sensitivity of antler GAGs to heparin lyase III showed that this sample contained heparan sulfate. After incubation of antler GAGs with chondroitin lyase ABC, the HS-containing fraction was recovered by ethanol precipitation The composition of HS disaccharides in this fraction was determined by its complete depolymn. with a

mixture of heparin lyase I, II, and III and anal. of the resulting disaccharides by the reversed-phase (RP) ion pairing-HPLC, monitored by the fluorescence detection using 2-cyanoacetamide as a post-column labeling reagent. Eight unsatd. disaccharides (ΔUA-GlcNAc, ΔUA-GlcNS, ΔUA-GlcNAc6S, ΔUA2S-GlcNAc, ΔUA-GlcNS6S, ΔUA2S-GlcNS, ΔUA2S-GlcNAc6S, ΔUA2S-GlcNS6S) were produced from antler HS by digestion with the mixture of heparin lyases. The total content of 2-O-sulfo disaccharide units in antler HS was higher than that of heparan sulfate from most other animal sources.

CC 6-4 (General Biochemistry)
Section cross-reference(s): 13

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 2 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2005:174300 CAPLUS
DOCUMENT NUMBER: 142:417327
TITLE: Quantitative analysis of chondroitin sulfate in raw materials, ophthalmic solutions, soft capsules, and liquid preparations
AUTHOR(S): Sim, Joon-Soo; Jun, Gyungjin; Toida, Toshihiko; Cho, So Yean; Choi, Don Woong; Chang, Seung-Yeup; **Linhardt, Robert J.; Kim, Yeong Shik**
CORPORATE SOURCE: Natural Products Research Institute, College of Pharmacy, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Journal of Chromatography, B: Analytical Technologies in the Biomedical and Life Sciences (2005), 818(2), 133-139
CODEN: JCBAAI; ISSN: 1570-0232
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The authors performed the quant. anal. of chondroitin sulfate (CS) obtained from raw materials and various pharmaceutical prepns. To quantify CS content in raw materials and in an ophthalmic solution, each test sample and the authentic CS were 1st digested by chondroitinase ABC. The CS disaccharides produced were analyzed by strong anion-exchange high-performance liquid chromatog. (SAX-HPLC) and CS content was quantified by calculating the total peak areas of the disaccharides derived from a CS calibration curve. In the case of soft capsules, CS was 1st extracted with hexane followed by phenol-chloroform to remove oil and protein ingredients. The extracted CS samples were depolymd. by chondroitinase ABC and CS content was determined Quant. anal. of the disaccharides derived from raw materials and an ophthalmic solution showed the CS contents (%) were 39.5 to 105.6 and 103.3, resp. In case of CS anal. in soft capsules and liquid prepns., the overall recovery (%) of the spiked CS was 96.79 - 103.54 and 97.10 to 103.17, resp. In conclusion, the quant. anal. of the disaccharides produced by enzymic digestion can be used in the direct quantitation of CS containing pharmaceutical formulations.

CC 64-2 (Pharmaceutical Analysis)
Section cross-reference(s): 17, 63

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 3 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 4

ACCESSION NUMBER: 2004:740132 CAPLUS
DOCUMENT NUMBER: 141:254539
TITLE: Antitumor inhibitors and use thereof

INVENTOR(S): **Linhardt, Robert J.; Kim, Yeong Shik**
PATENT ASSIGNEE(S): University of Iowa Research Foundation, USA
SOURCE: PCT Int. Appl., 28 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004075848	A2	20040910	WO 2004-US5402	20040223
WO 2004075848	A3	20050414		

W: AE, AE, AG, AL, AL, AM, AM, AM, AT, AT, AU, AZ, AZ, BA, BB, BG, BG, BR, BR, BW, BY, BY, BZ, BZ, CA, CH, CN, CN, CO, CO, CR, CR, CU, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EC, EE, EE, EG, ES, ES, FI, FI, GB, GD, GE, GE, GH, GM, HR, HR, HU, HU, ID, IL, IN, IS, JP, JP, KE, KE, KG, KG, KP, KP, KP, KR, KR, KZ, KZ, KZ, LC, LK, LR, LS, LS, LT, LU, LV, MA, MD, MD, MG, MK, MN, MW, MX, MX, MZ, MZ, NA, NI

RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US 2005075312	A1	20050407	US 2004-786613	20040223

PRIORITY APPLN. INFO.: US 2003-449661P P 20030224

AB The present invention provides pharmaceutical compns. for the treatment of cancer and inhibiting an increase in the volume or mass of a tumor, and methods for the treatment of cancer and inhibiting an increase in the volume or mass of a tumor.

IC ICM A61K
CC 1-6 (Pharmacology)
ST antitumor angiogenesis inhibitor **acharan sulfate** lung carcinoma
IT Angiogenesis inhibitors
Antitumor agents
Sarcoma
(antitumor angiogenesis inhibitor **acharan sulfate**)
IT Lung, neoplasm
(carcinoma; antitumor angiogenesis inhibitor **acharan sulfate**)
IT Cell proliferation
(inhibition, endothelial; antitumor angiogenesis inhibitor **acharan sulfate**)
IT Carcinoma
(pulmonary; antitumor angiogenesis inhibitor **acharan sulfate**)
IT **192662-57-0, Acharan sulfate**
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(I and II; antitumor angiogenesis inhibitor **acharan sulfate**)
IT **192662-57-0, Acharan sulfate**
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(I and II; antitumor angiogenesis inhibitor **acharan sulfate**)
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L167 ANSWER 4 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 5
ACCESSION NUMBER: 2004:304141 CAPLUS
DOCUMENT NUMBER: 140:385739
TITLE: Long duration of anticoagulant activity and protective effects of **acharan sulfate** in vivo
AUTHOR(S): Li, Da-Wei; Lee, In Sun; Sim, Joon-Soo; Toida, Toshihiko; **Linhardt, Robert J.**; **Kim, Yeong Shik**
CORPORATE SOURCE: College of Pharmacy, Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Thrombosis Research (2004), 113(1), 67-73
CODEN: THBRAA; ISSN: 0049-3848
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Introduction: We previously reported that a new glycosaminoglycan, **acharan** sulfate (AS) from the African giant snail Achatina fulica showed anticoagulant activity in vitro, but was much less active when compared to heparin. In the present study, the anticoagulant activity of AS was investigated in vivo. Methods: AS and heparin were administered to mice and rats in various doses and the anticoagulant activities were measured by aPTT assay. Both were also compared in a thrombin-induced lethality animal model. As one of the possible mechanisms, AS-thrombin interaction was studied by using surface plasmon resonance spectroscopy. Results: I.V. administration of AS to mice prolonged the clotting time (aPTT) in a time and dose-dependent manner. Although the anticoagulant activity was low in rats, it steadily increased over 5 h after administration of AS (30 mg/kg). In contrast, the increase in aPTT induced by 5 mg/kg of heparin was restored to a normal level after 3 h. In a thrombin-induced lethality model in mice, AS (20 mg/kg) protected against lethality by 80%, while heparin (20 mg/kg) did not show any protective activity beyond 3.5 h post-administration. AS could be also detected in plasma even 5 h after i.v. administration to rats. The binding constant (KD) of AS to thrombin was 7.27+10-6 M, corresponding to moderate binding affinity. Conclusions: These results show that the longer duration of AS in blood could prolong the clotting time determined by aPTT and offering protection against thrombin-induced lethality. One possible mechanism may result from AS-thrombin interaction.

CC 1-8 (Pharmacology)
ST anticoagulant **acharan sulfate** thrombin clotting time
IT Anticoagulants
Blood coagulation
(long duration of anticoagulant activity and protective effects of **acharan sulfate** in vivo)
IT **192662-57-0, Acharan sulfate**
RL: ANT (Analyte); PAC (Pharmacological activity); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(long duration of anticoagulant activity and protective effects of **acharan sulfate** in vivo)
IT 9002-04-4, Thrombin
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(long duration of anticoagulant activity and protective effects of **acharan sulfate** in vivo)
IT **192662-57-0, Acharan sulfate**
RL: ANT (Analyte); PAC (Pharmacological activity); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)

(long duration of anticoagulant activity and protective effects of **acharan sulfate** in vivo)
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 5 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 6
ACCESSION NUMBER: 2004:15557 CAPLUS
DOCUMENT NUMBER: 140:412133
TITLE: Enhancement of heparin and heparin disaccharide absorption by the Phytolacca americana saponins
AUTHOR(S): Cho, So Yean; Sim, Joon-soo; Kang, Sam Sik; Jeong, Choon-sik; **Linhardt, Robert J.**; **Kim, Yeong Shik**
CORPORATE SOURCE: Natural Products Research Institute, College of Pharmacy, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Archives of Pharmacal Research (2003), 26(12), 1102-1108
CODEN: APHRDQ; ISSN: 0253-6269
PUBLISHER: Pharmaceutical Society of Korea
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We studied the effects of phytolaccosides, saponins from Phytolacca americana, on the intestinal absorption of heparin in vitro and in vivo. The absorption enhancing activity of these compds. (phytolaccosides B, D2, E, F, G and I) was determined by changes in transepithelial elec. resistance (TEER) and the transport amount of heparin disaccharide, the major repeating unit of heparin, across Caco-2 cell monolayers. With the exception of phytolaccoside G, all of them decreased TEER values and increased the permeability in a dose-dependent and time-dependent manner. In vitro, phytolaccosides B, D2, and E showed significant absorption enhancing activities, while effects by phytolaccoside F and I were mild. In vivo, phytolaccoside E increased the activated partial thromboplastin time (APTT) and thrombin time, indicating that phytolaccoside E modulated the transport of heparin in intestinal route. These results suggest that a series of phytolaccosides from Phytolacca americana can be applied as pharmaceutical excipients to improve the permeability of macromols. and hydrophilic drugs having difficulty in absorption across the intestinal epithelium.
CC 63-5 (Pharmaceuticals)
Section cross-reference(s): 1
REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 6 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 7
ACCESSION NUMBER: 2003:209472 CAPLUS
DOCUMENT NUMBER: 139:207217
TITLE: Suppression of tumor growth by a new glycosaminoglycan isolated from the African giant snail Achatina fulica
AUTHOR(S): Lee, Yeon Sil; Yang, Hyun Ok; Shin, Kuk Hyun; Choi, Hyung Seok; Jung, Sang Hoon; **Kim, Yong Man**; Oh, Deok Kun; **Linhardt, Robert J.**; **Kim, Yeong Shik**
CORPORATE SOURCE: College of Pharmacy, Natural Products Research Institute, Seoul National University, Seoul, Jongno-Ku, 110-460, S. Korea

SOURCE: European Journal of Pharmacology (2003), 465(1-2), 191-198
CODEN: EJPHAZ; ISSN: 0014-2999
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB **Acharan** sulfate is a new type of glycosaminoglycan from the giant African snail, Achatina fulica. **Acharan** sulfate, which has a primary repeating disaccharide structure of α-d-N-acetylglucosaminyl-2-O-sulfo-α-l-iduronic acid, was studied as a potential antitumor agent in both in vivo and in vitro assays. The antiangiogenic activity of **acharan** sulfate was evaluated in the chorioallantoic membrane assay and by measuring its effect on the proliferation of calf pulmonary artery endothelial cells. In vivo, a matrigel plug assay showed that **acharan** sulfate suppressed basic fibroblast growth factor (bFGF)-stimulated angiogenesis and lowered the Hb content inside the plug. **Acharan** sulfate was administered s.c. at two doses for 15 days to C57BL/6 mice implanted with murine Lewis lung carcinoma in the back. It was also administered i.p. to ICR mice bearing sarcoma 180 at a dose of 30 mg/kg. S.c. injection of **acharan** sulfate at doses of 10 and 30 mg/kg decreased tumor weight and tumor volume by 40% without toxicity or resistance. I.p. injection of **acharan** sulfate also decreased tumor weight and volume by 40% in sarcoma 180-bearing mice. These results suggest that the antitumor activity of **acharan** sulfate may be related to the inhibition of angiogenesis.

CC 1-6 (Pharmacology)

ST glycosaminoglycan **acharan sulfate** antitumor lung carcinoma sarcoma Achatina snail; angiogenesis inhibitor glycosaminoglycan **acharan sulfate** antitumor Achatina snail

IT **192662-57-0, Acharan sulfate**
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(suppression of tumor growth by a new glycosaminoglycan isolated from the African giant snail Achatina fulica)

IT **192662-57-0, Acharan sulfate**
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(suppression of tumor growth by a new glycosaminoglycan isolated from the African giant snail Achatina fulica)

RN 192662-57-0 CAPLUS

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 7 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 8

ACCESSION NUMBER: 2002:210512 CAPLUS
DOCUMENT NUMBER: 137:87808
TITLE: Enhancement of paracellular transport of heparin disaccharide across Caco-2 cell monolayers
AUTHOR(S): Cho, So Yean; Kim, Jong Sik; Li, Hong; Shim, Changkoo; **Linhardt, Robert J.; Kim, Yeong Shik**
CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Archives of Pharmacal Research (2002), 25(1), 86-92
CODEN: APHRDQ; ISSN: 0253-6269
PUBLISHER: Pharmaceutical Society of Korea
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The enhancement of the paracellular transport of heparin disaccharide (the major repeating unit of heparin) across Caco-2 cell monolayers by various absorption enhancers was tested. The cytotoxicity of these enhancers was also examined The effects of Quillaja saponin, dipotassium glycyrrhizinate, 18β-glycyrrhetinic acid, sodium caprate, Triton X-100, and taurine were determined by measuring changes in transepithelial elec. resistance (TEER) and the amount of heparin disaccharide transported. 18β-Glycyrrhetinic acid and taurine decreased TEER and increased the permeability to heparin disaccharide in a concentrate- and time-dependent manner with little or negligible cytotoxicity. The results indicate that these absorption enhancers can widen the tight junction, which is a dominant paracellular absorption route of hydrophilic compds. It is possible that these absorption enhancers could be used as pharmaceutical excipients to improve the transport of macromols. and hydrophilic drugs having low permeability across the intestinal epithelium.

CC 1-2 (Pharmacology)

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 8 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 9

ACCESSION NUMBER: 2001:68553 CAPLUS

DOCUMENT NUMBER: 134:262794

TITLE: Active Site of Chondroitin AC Lyase Revealed by the Structure of Enzyme-Oligosaccharide Complexes and Mutagenesis

AUTHOR(S): Huang, Weijun; Boju, Lorena; Tkalec, Lydia; Su, Hongsheng; Yang, Hyun-Ok; Gunay, Nur Sibel; **Linhardt, Robert J.**; **Kim, Yeong Shik** ; Matte, Allan; Cygler, Miroslaw

CORPORATE SOURCE: Biotechnology Research Institute, Montreal, QC, H4P 2R2, Can.

SOURCE: Biochemistry (2001), 40(8), 2359-2372
CODEN: BICHAW; ISSN: 0006-2960

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The crystal structures of Flavobacterium heparinium chondroitin AC lyase (chondroitinase AC; E.C. 4.2.2.5) bound to dermatan sulfate hexasaccharide (DShexa), tetrasaccharide (DStetra), and hyaluronic acid tetrasaccharide (HAtetra) have been refined at 2.0, 2.0, and 2.1 Å resolution, resp. The structure of the Tyr234Phe mutant of AC lyase bound to a chondroitin sulfate tetrasaccharide (CStetra) has also been determined to 2.3 Å resolution For each of these complexes, four (DShexa and CStetra) or two (DStetra and HAtetra) ordered sugars are visible in electron d. maps. The lyase AC DShexa and CStetra complexes reveal binding at four subsites, -2, -1, +1, and +2, within a narrow and shallow protein channel. We suggest that subsites -2 and -1 together represent the substrate recognition area, +1 is the catalytic subsite and +1 and +2 together represent the product release area. The putative catalytic site is located between the substrate recognition area and the product release area, carrying out catalysis at the +1 subsite. Four residues near the catalytic site, His225, Tyr234, Arg288, and Glu371 together form a catalytic tetrad. The mutations His225Ala, Tyr234Phe, Arg288Ala, and Arg292Ala, revealed residual activity for only the Arg292Ala mutant. Structural data indicate that Arg292 is primarily involved in recognition of the N-acetyl and sulfate moieties of galactosamine, but does not participate directly in catalysis. Candidates for the general base, removing the proton attached to C-5 of the glucuronic acid at the +1 subsite, are Tyr234, which could be transiently deprotonated during catalysis, or His225. Tyrosine 234 is a candidate to protonate the leaving group. Arginine 288 likely

contributes to charge neutralization and stabilization of the enolate anion intermediate during catalysis.
CC 7-5 (Enzymes)
Section cross-reference(s): 75
REFERENCE COUNT: 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 9 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 10
ACCESSION NUMBER: 2001:820002 CAPLUS
DOCUMENT NUMBER: 136:99401
TITLE: Localization and characterization of **acharan sulfate** in the body of the giant African snail Achatina fulica
AUTHOR(S): Jeong, Jia; Toida, Toshihiko; Muneta, Yuki; Kosiishi, Ichiro; Imanari, Toshio; **Linhardt, Robert J.**; Choi, Hyung Seok; Wu, Song Ji; **Kim, Yeong Shik**
CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Comparative Biochemistry and Physiology, Part B: Biochemistry & Molecular Biology (2001), 130B(4), 513-519
CODEN: CBPBB8; ISSN: 1096-4959
PUBLISHER: Elsevier Science Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **Acharan** sulfate is a glycosaminoglycan (GAG), having the structure →4-2-acetamido-2-deoxy-α-d-glucopyranose(1 4)-2-sulfo-α-l-idopyranosyluronic acid 1→, isolated from the body of the giant African snail Achatina fulica. This GAG represents 3-5% of the dry weight of this snail's soft body tissues. Frozen sections and polyester wax sections of the snail's body were stained by Alcian blue-periodic acid-Schiff's reagent (PAS) to localize **acharan** sulfate. Alcian blue staining indicated that GAG was mainly secreted into the outer surface of the body from internal granules. A highly mucous material was collected and treated and the **acharan** sulfate was recovered by ethanol and cetyl pyridinium chloride precipitation Crude **acharan** sulfate was purified by DEAE-Sephacel ion-exchange chromatog. Depolymn. of intact mucus and purified **acharan** sulfate fractions by heparin lyase II (heparitinase I) from Flavobacterium heparinum produced an unsatd. disaccharide as a major product, establishing the repeating unit of **acharan** sulfate. These results demonstrate that mucus in the granule and secreted to the outside of the body is composed entirely of **acharan** sulfate.
CC 12-1 (Nonmammalian Biochemistry)
ST snail **acharan sulfate**
IT Achatina fulica
Mucus
(localization and characterization of **acharan sulfate** in the body of the giant African snail Achatina fulica)
IT **192662-57-0**, **Acharan sulfate**
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(localization and characterization of **acharan sulfate** in the body of the giant African snail Achatina fulica)
IT **192662-57-0**, **Acharan sulfate**
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(localization and characterization of **acharan sulfate** in the body of the giant African snail Achatina fulica)
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 10 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 11
ACCESSION NUMBER: 2001:453852 CAPLUS
DOCUMENT NUMBER: 135:179758
TITLE: Enzymatic preparation of heparin disaccharides as building blocks in glycosaminoglycan synthesis
AUTHOR(S): **Kim, Yeong Shik**; Thanawiroon, Charuwan; Bazin, Helene G.; Kerns, Robert J.; **Linhardt, Robert J.**
CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Preparative Biochemistry & Biotechnology (2001), 31(2), 113-124
CODEN: PBBIF4; ISSN: 1082-6068
PUBLISHER: Marcel Dekker, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 135:179758
AB Pharmaceutical heparin and heparan sulfate, isolated from a side-stream of a com. heparin manufacturing process, have been enzymically depolymd. with heparin lyases obtained from Flavobacterium heparinun. Heparin afforded a trisulfated disaccharide product that was recovered from the reaction mixture using gel permeation chromatog. Heparan sulfate afforded unsulfated disaccharide that was conveniently recovered from the product mixture by ion exchange chromatog. Both disaccharides were obtained in gram amts. at 90% or higher purity. Both enzymically prepared disaccharides were chemical protected to prepare building blocks required for the future chemical synthesis of therapeutically valuable heparin oligosaccharides.
CC 16-2 (Fermentation and Bioindustrial Chemistry)
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 11 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 12
ACCESSION NUMBER: 2000:121629 CAPLUS
DOCUMENT NUMBER: 132:161252
TITLE: N-acetylglucosamine-2-O-sulfated uronic acid compounds for angiogenesis inhibitors, and therapeutic use thereof
INVENTOR(S): Bernfield, Merton; **Kim, Yeong Shik**; **Linhardt, Robert J.**
PATENT ASSIGNEE(S): Children's Medical Center Corp, USA; The University of Iowa Research Foundation
SOURCE: U.S., 11 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6028061	A	20000222	US 1998-99296	19980618
PRIORITY APPLN. INFO.:			US 1998-99296	19980618

AB A mol. having as its major repeating units N-acetylglucosamine alternating in sequence with 2-O-sulfated uronic acid inhibits FGF mitogenicity, and thus is useful in inhibiting angiogenesis. Addnl., the mol. has low

toxicity and inhibits FGF mitogenicity without affecting anticoagulant activity. One preferred mol. is a glycosaminoglycan, e.g. **acharan** sulfate. The mols. are in pharmaceutical compns. that can be used in the treatment of diseases which are angiogenesis-dependent.

IC ICM A61K031-715
ICS C07H013-12
INCL 514054000
CC 1-8 (Pharmacology)
Section cross-reference(s): 33, 63
ST angiogenesis inhibition acetylglucosamine sulfated uronate compd; glycosaminoglycan angiogenesis inhibition; **acharan sulfate** angiogenesis inhibition
IT **192662-56-9P**, N-Sulfoacharan sulfate
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process)
(acetylglucosamine-sulfated uronate compds. for angiogenesis inhibitors, and therapeutic use)
IT **192662-57-0**, **Acharan sulfate**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(acetylglucosamine-sulfated uronate compds. for angiogenesis inhibitors, and therapeutic use)
IT **192662-56-9P**, N-Sulfoacharan sulfate
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process)
(acetylglucosamine-sulfated uronate compds. for angiogenesis inhibitors, and therapeutic use)
RN 192662-56-9 CAPLUS
CN Acharan, N-deacetyl-N-sulfo, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **192662-57-0**, **Acharan sulfate**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(acetylglucosamine-sulfated uronate compds. for angiogenesis inhibitors, and therapeutic use)
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
REFERENCE COUNT: 4 . THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 12 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 13
ACCESSION NUMBER: 2000:757505 CAPLUS
DOCUMENT NUMBER: 134:56899
TITLE: Preparation and structural determination of dermatan sulfate-derived oligosaccharides
AUTHOR(S): Yang, Hyun Ok; Gunay, Nur Sibel; Toida, Toshihiko; Kuberan, Balagurunathan; Yu, Guangli; **Kim, Yeong Shik**; **Linhardt, Robert J.**
CORPORATE SOURCE: Department of Chemistry, Division of Medicinal and Natural Products Chemistry and Department of Chemical

and Biochemical Engineering, University of Iowa, Iowa City, IA, 52242, USA
SOURCE: Glycobiology (2000), 10(10), 1033-1040
CODEN: GLYCE3; ISSN: 0959-6658
PUBLISHER: Oxford University Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Eight oligosaccharides were prepared from dermatan sulfate (DS) and their structures were elucidated. Porcine intestinal mucosal DS was subjected to controlled depolymn. using chondroitin ABC lyase (chondroitinase ABC). The oligosaccharide mixture formed was fractionated by low-pressure gel permeation chromatog. (GPC). Size uniform mixts. of disaccharides, tetrasaccharides, hexasaccharides, octasaccharides, decasaccharides, and dodecasaccharides were obtained. Each size-fractionated mixture was then purified on the basis of charge by repetitive semi-preparative strong-anion-exchange (SAX) high-performance liquid chromatog. (HPLC). This approach has led to the isolation of six homogeneous oligosaccharides. The size of the oligosaccharides were determined using GPC-HPLC. Treatment of tetrasaccharide and hexasaccharide fragments with Hg(OAc)2 afforded trisaccharide and pentasaccharide products, resp. The purity of the oligosaccharides obtained was confirmed by anal. SAX-HPLC, and capillary electrophoresis (CE). The mol. mass and degree of sulfation of the eight purified oligosaccharides were elucidated using electrospray ionization (ESI) mass spectrometry and their structures were established with high field NMR (NMR) spectroscopy. These DS-oligosaccharides are currently being used to study for interaction of the DS with biol. important proteins.
CC 33-8 (Carbohydrates)
Section cross-reference(s): 7, 9, 22
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 13 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 14
ACCESSION NUMBER: 2000:583737 CAPLUS
DOCUMENT NUMBER: 133:146678
TITLE: Purification and characterization of a novel heparinase from Bacteroides stercoris HJ-15
AUTHOR(S): Kim, Byung-Taek; Kim, Wan-Seok; **Kim, Yeong Shik**; **Linhardt, Robert J.**; Kim, Dong-Hyun
CORPORATE SOURCE: College of Pharmacy, Kyung Hee University, Seoul, 130-701, S. Korea
SOURCE: Journal of Biochemistry (Tokyo) (2000), 128(2), 323-328
CODEN: JOBIAO; ISSN: 0021-924X
PUBLISHER: Japanese Biochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A novel type of heparinase (heparin lyase) (I) was purified from B. stercoris HJ-15, isolated from human intestine, which produced 3 kinds of heparinases. I was purified to apparent homogeneity by a combination of QAE-cellulose, DEAE-cellulose, CM-Sephadex C-50, hydroxylapatite, and HiTrap SP chromatogs. with a final specific activity of 19.5 μmol/min/mg. I showed optimal activity at pH 7.2 and 45°, and the presence of 300 mM KCl greatly enhanced its activity. Purified I was inhibited by Cu2+, Pb2+, and some agents that modified His and Cys residues, and activated by reducing agents such as dithiothreitol and 2-mercaptoethanol. Purified Bacteroides I was an eliminase that showed its greatest activity on bovine intestinal heparan sulfate, and to a lesser extent on porcine intestinal heparan sulfate and heparin. I did

not act on **acharan** sulfate, but de-O-sulfated **acharan** sulfate and N-sulfoacharan sulfate were found to be poor substrates. The substrate specificity of I was similar to that of Flavobacterium heparinase II. However, an internal amino acid sequence of purified Bacteroides I showed significant (73%) homol. to Flavobacterium heparinase III and only 43% homol. to Flavobacterium heparinase II. These findings suggest that the Bacteroides I is a novel enzyme degrading glycosaminoglycans.

CC 7-2 (Enzymes)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 14 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 15

ACCESSION NUMBER: 1999:792899 CAPLUS

DOCUMENT NUMBER: 132:204768

TITLE: Crystal Structure of Chondroitinase B from Flavobacterium heparinum and its Complex with a Disaccharide Product at 1.7 Å Resolution

AUTHOR(S): Huang, Weijun; Matte, Allan; Li, Yunge; **Kim, Yeong Shik**; **Linhardt, Robert J.**; Su, Hongsheng; Cygler, Miroslaw

CORPORATE SOURCE: Biotechnology Research Institute, Montreal, QC, H4P 2R2, Can.

SOURCE: Journal of Molecular Biology (1999), 294(5), 1257-1269
CODEN: JMOBAK; ISSN: 0022-2836

PUBLISHER: Academic Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Glycosaminoglycans (GAGs) are a family of acidic heteropolysaccharides, including such mols. as chondroitin sulfate, dermatan sulfate, heparin and keratan sulfate. Cleavage of the O-glycosidic bond within GAGs can be accomplished by hydrolases as well as lyases, yielding disaccharide and oligosaccharide products. We have determined the crystal structure of chondroitinase B, a glycosaminoglycan lyase from Flavobacterium heparinum, as well as its complex with a dermatan sulfate disaccharide product, both at 1.7 Å resolution Chondroitinase B adopts the right-handed parallel β-helix fold, found originally in pectate lyase and subsequently in several polysaccharide lyases and hydrolases. Sequence homol. between chondroitinase B and a mannuronate lyase from Pseudomonas sp. suggests this protein also adopts the β-helix fold. Binding of the disaccharide product occurs within a pos. charged cleft formed by loops extending from the surface of the β-helix. Amino acid residues responsible for recognition of the disaccharide, as well as potential catalytic residues, have been identified. Two arginine residues, Arg318 and Arg364, are found to interact with the sulfate group attached to O-4 of N-acetylgalactosamine. Cleavage of dermatan sulfate likely occurs at the reducing end of the disaccharide, with Glu333 possibly acting as the general base. (c) 1999 Academic Press.

CC 7-5 (Enzymes)
Section cross-reference(s): 75

REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 15 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 16

ACCESSION NUMBER: 1999:804912 CAPLUS

DOCUMENT NUMBER: 132:105537

TITLE: A new sulfated β-galactan from clams with anti-HIV activity

AUTHOR(S): Amornrut, Chaidedgumjorn; Toida, Toshihiko; Imanari, Toshio; Woo, Eun-Rhan; Park, Hokoon; **Linhardt,**

Robert; Wu, Song Ji; **Kim, Yeong Shik**
CORPORATE SOURCE: Faculty of Pharmaceutical Sciences, Chiba University, Chiba, 263-8522, Japan
SOURCE: Carbohydrate Research (1999), 321(1-2), 121-127
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A new polysaccharide composed of galactan sulfate with a β-(1→3)-glycosidic linkage has been isolated from the marine clam species Meretrix petechialis. The polysaccharide was homogeneous in its composition containing D-galactose. The glycosidic linkage was examined by 2D DQF-COSY and 2D NOESY spectroscopy. The coupling constant of anomeric proton was 7.8 Hz, suggesting a β-galacto configuration. The downfield shift of H-2 of galactose residue demonstrated the presence of 2-O-sulfonate group. TQF-COSY confirmed that the C-6 position was substituted with a sulfonate group. The anti-HIV activity of the polysaccharides has been evaluated by the inhibition of syncytia formation. The fusion index and percentage fusion inhibition of sulfated galactan were 0.34 and 56% at 200 μg/mL.
CC 12-1 (Nonmammalian Biochemistry)
Section cross-reference(s): 1, 33
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 16 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 17
ACCESSION NUMBER: 1998:567562 CAPLUS
DOCUMENT NUMBER: 129:276176
TITLE: Determination of the structure of oligosaccharides prepared from **acharan sulfate**
AUTHOR(S): **Kim, Yeong Shik**; Ahn, Mi Young; Wu, Song Ji; Kim, Dong-Hyun; Toida, Toshihiko; Teesch, Lynn M.; Park, Youmie; Yu, Guyong; Lin, Jihon; **Linhardt, Robert J.**
CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Glycobiology (1998), 8(9), 869-877
CODEN: GLYCE3; ISSN: 0959-6658
PUBLISHER: Oxford University Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The fine structure of **acharan** sulfate, a recently discovered glycosaminoglycan isolated from Achatina fulica, was examined This glycosaminoglycan has a major disaccharide repeating unit of →4)-α-D-GlcNpAc(1→4)-α-L-IdoAp2S(1→ (where GlcNpAc is N-acetylglucosamine, IdoAp is iduronic acid, and S is sulfate) making it structurally related to both heparin and heparan sulfate. Using heparin lyases prepared from Flavobacterium heparinum and a newly isolated heparinase from Bacteroides stercoris, the controlled enzymic depolymn. of **acharan** sulfate was undertaken to prepare a mixture of oligosaccharides. Fractionation of this mixture of oligosaccharides by strong-anion-exchange high performance liquid chromatog. afforded oligosaccharides that capillary electrophoresis established were sufficiently pure for structural characterization. Electro-spray ionization mass spectrometry identified two series of oligosaccharides, one derived from **acharan** sulfate's major repeating unit and a second minor group of under-sulfated oligosaccharides. Proton NMR spectroscopy established the structure of these two classes of oligosaccharides to be ΔUAp2S(1→[4)-α-D-

GlcNpAc(1→4)-α-L-IdoAp2S(1→]n4)-D-GlcNpAcα,β (where n = 0,1,2,3 and ΔUAp is 4-deoxy-α-L-threo-hex-4-enopyranosyluronic acid) and ΔUAp(1→[4)-α-D-GlcNpAc(1→4)-α-L-IdoAp2S(1→]m-D-GlcNpAcα,β (where m = 1,2,3). These results suggest the presence of minor sequence variants in **acharan** sulfate containing unsulfated iduronic acid having the structure →4)-α-D-GlcNpAc-(1→4)-α-L-IdoAp(1→.

CC 33-8 (Carbohydrates)
Section cross-reference(s): 12

ST **acharan sulfate** glycosaminoglycan repeating unit; Achatina fulica polysaccharide mol structure

IT Molecular structure
(structure of oligosaccharides prepared from **acharan sulfate**)

IT Glycosaminoglycans, miscellaneous
RL: MSC (Miscellaneous)
(structure of oligosaccharides prepared from **acharan sulfate**)

IT Achatina fulica
(structure of oligosaccharides prepared from **acharan sulfate** from)

IT **177791-14-9P**
RL: BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(repeating unit of **acharan sulfate** isolated from Achatina fulica)

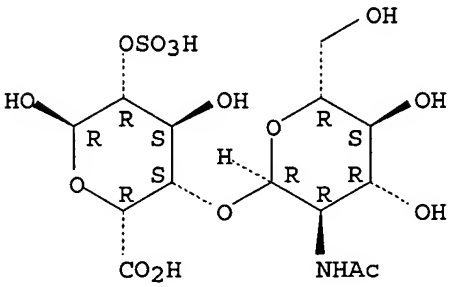
IT **192662-57-0, Acharan sulfate**
RL: MSC (Miscellaneous)
(structure of oligosaccharides prepared from by enzymic depolymn.)

IT **177791-14-9P**
RL: BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(repeating unit of **acharan sulfate** isolated from Achatina fulica)

RN 177791-14-9 CAPLUS

CN α-L-Idopyranuronic acid, 4-O-[2-(acetylamino)-2-deoxy-α-D-glucopyranosyl]-, 2-(hydrogen sulfate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT **192662-57-0, Acharan sulfate**
RL: MSC (Miscellaneous)
(structure of oligosaccharides prepared from by enzymic depolymn.)

RN 192662-57-0 CAPLUS

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 17 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 18
ACCESSION NUMBER: 1998:503220 CAPLUS
DOCUMENT NUMBER: 129:200293
TITLE: Characterization of a Bacteroides species from human intestine that degrades glycosaminoglycans
AUTHOR(S): Ahn, Mi Young; Shin, Kuk Hyun; Kim, Dong-Hyun; Jung, Eun-Ah; Toida, Toshihiko; **Linhardt, Robert J.** ; **Kim, Yeong Shik**
CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Canadian Journal of Microbiology (1998), 44(5), 423-429
CODEN: CJMIAZ; ISSN: 0008-4166
PUBLISHER: National Research Council of Canada
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Polysaccharide lyases that can degrade glycosaminoglycans (GAGs) were identified in an anaerobic strain living in the human intestine. The strain was isolated from the stool of a healthy male and identified as Bacteroides sp. strain HJ-15. A detailed taxonomical study indicated the species is a strain of Bacteroides stercoris. The isolate was cultured and the polysaccharide lyase activity was partially purified. This enzyme preparation could act on GAGs containing either glucosamine or galactosamine, suggesting the presence of both heparinases and chondroitinases. Various GAGs were incubated with the partially purified enzyme and the products formed were analyzed by strong anion-exchange high performance liquid chromatog. and proton NMR spectroscopy. These studies demonstrated the presence of at least two types of polysaccharide lyases: heparin lyase and chondroitin sulfate lyase. The eliminative mechanism of these lyase enzymes was confirmed through the isolation of unsatd. disaccharide products. The heparin lyase acted on both heparin and **acharan** sulfate, a GAG recently isolated from Achatina fulica. The Bacteroides chondroitin lyase acted on chondroitin sulfates A, B (dermatan sulfate), and C, resembling chondroitin lyase ABC. The presence of a GAG-degrading organism in human intestine may pose problems for the effective oral administration of GAG drugs.

CC 10-2 (Microbial, Algal, and Fungal Biochemistry)
Section cross-reference(s): 7

IT 9005-49-6, Heparin, biological studies 24967-93-9, Chondroitin sulfate A 24967-94-0, Chondroitin sulfate B 25322-46-7, Chondroitin sulfate C **192662-57-0, Acharan sulfate**
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(characterization of a Bacteroides species from human intestine that degrades glycosaminoglycans)

IT **192662-57-0, Acharan sulfate**
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(characterization of a Bacteroides species from human intestine that degrades glycosaminoglycans)

RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 18 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 19
ACCESSION NUMBER: 1998:798038 CAPLUS
DOCUMENT NUMBER: 130:162744
TITLE: Chemical sulfonation and anticoagulant activity of **acharan sulfate**
AUTHOR(S): Wu, Song Ji; Chun, Moon Woo; Shin, Kuk Hyun; Toida, Toshihiko; Park, Youmie; **Linhardt, Robert J.** ; **Kim, Yeong Shik**
CORPORATE SOURCE: Natural Products Research Institute, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Thrombosis Research (1998), 92(6), 273-281
CODEN: THBRAA; ISSN: 0049-3848
PUBLISHER: Elsevier Science Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB **Acharan** sulfate is a glycosaminoglycan prepared from the giant African snail, Achatina fulica. This polysaccharide has a repeating disaccharide structure of →4)-2-deoxy-2-acetamido-α-D-glucopyra-nose (1→4)-2-sulfo-α-L-idopyranosyluronic acid (1→). Its structure is related to heparin and heparan sulfate but is distinctly different from all known members of these classes of glycosaminoglycans. Because of its structural similarities to heparin, chemical modified **acharan** sulfate was studied to understand the chemical structure effected its anticoagulant activity. After de-N-acetylation, **acharan** sulfate was N-sulfonated using either chlorosulfonic acid-pyridine or sulfur trioxide-trimeth-ylamine complex. The sulfate level in these products ranged from 22 to 24%(weight/weight), significantly less than that of heparin at 36%. The mol. weight of both N-sulfoacharan sulfates were comparable with that of heparin. In vitro anticoagulant activity assays showed that N-sulfoacharan sulfate derivs. were moderately active for the inhibition of thrombin and neither product showed any measurable anti-factor Xa activity. The differences in the activities of N-sulfoacharan sulfates produced by these two methods are probably ascribable to a small level of concomitant O-sulfonation obtained when using chlorosulfonic acid-pyridine.

CC 1-3 (Pharmacology)
ST sulfonation **acharan sulfate** glycosaminoglycan thrombin inhibiting structure; sulfoacharan sulfate deriv anticoagulant heparin structure; factor Xa sulfoacharan sulfate anticoagulant MSBAR
IT Achatina fulica
Anticoagulants
Sulfonation
(chemical sulfonation and anticoagulant activity of **acharan sulfate**)
IT Glycosaminoglycans, biological studies
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(chemical sulfonation and anticoagulant activity of **acharan sulfate**)
IT Structure-activity relationship
(thrombin-inhibiting; chemical sulfonation and anticoagulant activity of **acharan sulfate**)
IT **192662-56-9D**, N-Sulfoacharan sulfate, derivs.
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(chemical sulfonation and anticoagulant activity of **acharan sulfate**)
IT 9002-05-5, Factor Xa
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL

(Biological study); PROC (Process)
(chemical sulfonation and anticoagulant activity of **acharan sulfate**)
IT **192662-57-0, Acharan sulfate**
RL: BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(chemical sulfonation and anticoagulant activity of **acharan sulfate**)
IT 9005-49-6, Heparin, biological studies 9050-30-0, Heparan sulfate
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(chemical sulfonation and anticoagulant activity of **acharan sulfate**)
IT **192662-56-9D**, N-Sulfoacharan sulfate, derivs.
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(chemical sulfonation and anticoagulant activity of **acharan sulfate**)
RN 192662-56-9 CAPLUS
CN Acharan, N-deacetyl-N-sulfo, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **192662-57-0, Acharan sulfate**
RL: BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(chemical sulfonation and anticoagulant activity of **acharan sulfate**)
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 19 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 20
ACCESSION NUMBER: 1997:410216 CAPLUS
DOCUMENT NUMBER: 127:117569
TITLE: Glycosaminoglycans can influence fibroblast growth factor-2 mitogenicity without significant growth factor binding
AUTHOR(S): Wang, Huiming; Toida, Toshihiko; **Kim, Yeong Shik**; Capila, Ishan; Hileman, Ronald E.; Bernfield, Merton; **Linhardt, Robert J.**
CORPORATE SOURCE: Department of Pediatrics, Harvard Medical School, Boston, MA, 02115, USA
SOURCE: Biochemical and Biophysical Research Communications (1997), 235(2), 369-373
CODEN: BBRCA9; ISSN: 0006-291X
PUBLISHER: Academic
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Fibroblast growth factors are important heparin binding, mitogenic proteins. The binding site in heparin and heparan sulfate for fibroblast growth factor-2 (basic fibroblast growth factor) has been described as rich in glucosamine-2-sulfate 1→4 linked to iduronic acid-2-sulfate. The glucosamine residue in the heparin binding site is also 6-sulfated. A new glycosaminoglycan, **acharan** sulfate, has been chemical modified to prepare a polysaccharide, N-sulfoacharan sulfate, consisting of glucosamine-2-sulfate 1→4 linked to iduronic acid-2-sulfate. **Acharan** sulfate binds very weakly to fibroblast

growth factor-2 while N-sulfoacharan sulfate binds with nearly the same affinity as heparin. Mitogenicity studies were performed using heparan sulfate-free cells stably transfected with fibroblast growth factor receptor-1. **Acharan** sulfate inhibits heparin's enhancement of fibroblast growth factor-2 mitogenic activity, without affecting cell viability, while N-sulfoacharan sulfate shows heparin-like activity but at a greatly reduced level. These results suggest addnl. mechanisms not requiring high affinity glycosaminoglycan binding to fibroblast growth factor-2 may be important in its mitogenic activity.

CC 2-5 (Mammalian Hormones)

IT 9005-49-6, Heparin, biological studies 106096-93-9, Basic fibroblast growth factor **192662-56-9**, N-Sulfoacharan sulfate **192662-57-0**, **Acharan sulfate**
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(glycosaminoglycans influence FGF-2 mitogenicity without growth factor binding)

IT **192662-56-9**, N-Sulfoacharan sulfate **192662-57-0**, **Acharan sulfate**
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(glycosaminoglycans influence FGF-2 mitogenicity without growth factor binding)

RN 192662-56-9 CAPLUS

CN Acharan, N-deacetyl-N-sulfo, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 192662-57-0 CAPLUS

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L167 ANSWER 20 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 21

ACCESSION NUMBER: 1996:309677 CAPLUS

DOCUMENT NUMBER: 125:30324

TITLE: A new glycosaminoglycan from the giant African snail Achatina fulica

AUTHOR(S): **Kim, Yeong S.**; Jo, You Y.; Chang, Il M.; Toida, Toshihiko; Park, Youmie; **Linhardt, Robert J.**

CORPORATE SOURCE: Nat. Products Res. Inst., Seoul Natl. Univ., Seoul, 110-460, S. Korea

SOURCE: Journal of Biological Chemistry (1996), 271(20), 11750-11755
CODEN: JBCHA3; ISSN: 0021-9258

PUBLISHER: American Society for Biochemistry and Molecular Biology

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A new glycosaminoglycan has been isolated from the giant African snail Achatina fulica. This polysaccharide had a mol. weight of 29,000, calculated based on the viscometry, and a uniform repeating disaccharide structure of →4)-2-acetyl,2-deoxy-α-D-glucopyranose (1→4)-2-sulfo-α-L-idopyranosyluronic acid (1→. This polysaccharide represents a new, previously undescribed glycosaminoglycan. It is related to the heparin and heparan sulfate families of glycosaminoglycans but is distinctly different from all known members of these classes of

glycosaminoglycans. The structure of this polysaccharide, with adjacent N-acetylglucosamine and 2-sulfo-iduronic acid residues, also poses interesting questions about how it is made in light of our current understanding of the biosynthesis of heparin and heparan sulfate. This glycosaminoglycan represents 3-5% of the dry weight of this snail's soft body tissues, suggesting important biol. roles for the survival of this organism, and may offer new means to control this pest. Snail glycosaminoglycan tightly binds divalent cations, such as copper(II), suggesting a primary role in metal uptake in the snail. Finally, this new polysaccharide might be applied, like the Escherichia coli K5 capsular polysaccharide, to the study of glycosaminoglycan biosynthesis and to the semisynthesis of new glycosaminoglycan analogs having important biol. activities.

CC 12-1 (Nonmammalian Biochemistry)
Section cross-reference(s): 33

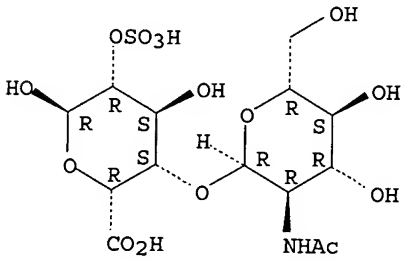
IT **177791-14-9D**, repeating unit
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(glycosaminoglycan isolation and structural characterization from giant African snail)

IT **177791-14-9D**, repeating unit
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(glycosaminoglycan isolation and structural characterization from giant African snail)

RN 177791-14-9 CAPLUS

CN α-L-Idopyranuronic acid, 4-O-[2-(acetylamino)-2-deoxy-α-D-glucopyranosyl]-, 2-(hydrogen sulfate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L167 ANSWER 21 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 22

ACCESSION NUMBER: 1995:469480 CAPLUS
DOCUMENT NUMBER: 123:83881
TITLE: Analysis of fluorescently labeled sugars by reversed-phase ion-pairing high-performance liquid chromatography
AUTHOR(S): **Kim, Y. S.**; Liu, J.; Han, X. J.; Pervin, A.; **Linhardt, R. J.**
CORPORATE SOURCE: Natural Products Inst., Seoul Natl. Univ., Seoul, S. Korea
SOURCE: Journal of Chromatographic Science (1995), 33(4), 162-7
CODEN: JCHSBZ; ISSN: 0021-9665
PUBLISHER: Preston Publications
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Reducing sugars, including monosaccharides, disaccharides, and a trisaccharide, are derivatized by reductive amination with 7-amino-1,3-naphthalene disulfonic acid. Reversed-phase ion-pairing high-performance liquid chromatog. is then used to sep. these visibly fluorescent, charged conjugates. Isocratic elution with triethylamine-acetic acid from a Ph column, a C18 column, and C18 and Ph columns in series gives good sepns. of a mixture of monosaccharides and a mixture of disaccharides and trisaccharides. Resolution of certain monosaccharides and trisaccharides. Resolution of certain monosaccharides is enhanced by replacing triethylamine with a chiral amine and using gradient elution. Further enhancement of resolution is achieved by adding phenylboronic acid, an agent capable of complexing with the vicinal diol functionality present in many sugars. The trimethylamine-acetic acid eluant permits detection by either UV absorbance or fluorescence, and the addition of a chiral ion-pairing agent or a phenylboronic acid complexing agent necessitates fluorescence detection. A reversible Schiff base form of the fluorescent sugar conjugate is prepared; it is sufficient stable to perform fractionations but sufficiently unstable to be converted to a fluorescent label and reducing sugar.
CC 33-7 (Carbohydrates)

L167 ANSWER 22 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 23
ACCESSION NUMBER: 1992:443868 CAPLUS
DOCUMENT NUMBER: 117:43868
TITLE: Lectin affinity electrophoresis for the separation of fluorescently labeled sugar derivatives
AUTHOR(S): Lee, K. B.; **Kim, Y. S.**; **Linhardt, R. J.**
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Analytical Biochemistry (1992), 203(2), 206-10
CODEN: ANBCA2; ISSN: 0003-2697
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Lectin affinity electrophoresis was applied to the separation of charged, fluorescent conjugates of disaccharides. Four fluorescent conjugates were prepared by reductive amination of α-D-Man-(1→3)-D-Man, α-D-Gal-(1→4)-D-Gal, α-D-Gal-(1→6)-D-Glc, and β-D-Gal-(1→4)-D-Glc in the presence of 7-amino-1,3-naphthalenedisulfonic acid. These charged fluorescent-disaccharide conjugates have identical mol. weight and in the absence of Co A lectin failed to sep. either by agarose or by polyacrylamide gel electrophoresis. In the presence of either free or immobilized Con A, agarose gel electrophoresis and polyacrylamide gel electrophoresis could sep. the fluorescent conjugates of the above sugars.
CC 9-7 (Biochemical Methods)
Section cross-reference(s): 33

L167 ANSWER 23 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 24
ACCESSION NUMBER: 1992:2692 CAPLUS
DOCUMENT NUMBER: 116:2692
TITLE: Capillary zone electrophoresis for the quantitation of oligosaccharides formed through the action of chitinase
AUTHOR(S): Lee, Kyung Bok; **Kim, Yeong Shik**; **Linhardt, Robert J.**
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Electrophoresis (1991), 12(9), 636-40
CODEN: ELCTDN; ISSN: 0173-0835
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Capillary zone electrophoresis with fluorescence detection was used to analyze the products formed by chitinase acting on N-acetylchitooligosaccharide-fluorescent conjugates. Six oligosaccharides of the structure [N-acetylglucosamine(1→4)]n (where n = 1-6) were conjugated to 7-amino-1,3-naphthalene disulfonic acid by reductive amination. Each oligosaccharide-fluorescent conjugate was purified by preparative gradient PAGE, semi-dry electrotransfer to a pos.-charged nylon membrane, and recovered by washing the membrane with salt solution The products formed by treating each oligosaccharide-fluorescent conjugate with chitinase were analyzed by capillary zone electrophoresis. The chitinase treatment hexasaccharide-fluorescent conjugate was also examined kinetically to study the action pattern of this enzyme.
CC 7-3 (Enzymes)
Section cross-reference(s): 9

L167 ANSWER 24 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 25
ACCESSION NUMBER: 1992:443130 CAPLUS
DOCUMENT NUMBER: 117:43130
TITLE: Detection of chitinase activity using fluorescence-labeled substrate on polyacrylamide gel
AUTHOR(S): **Kim, Yeong Shik**; Lee, Kyung Bok; **Linhardt, Robert J.**
CORPORATE SOURCE: Natl. Prod. Res. Inst., Seoul Natl. Univ., Seoul, 110-460, S. Korea
SOURCE: Han'guk Saenghwa Hakhoechi (1991), 24(5), 466-71
CODEN: KBCJAK; ISSN: 0368-4881
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Gradient PAGE was used to analyze the products formed by chitinases acting on N-acetylchitohexaose-fluorescent conjugates. N-Acetylchitooligosaccharides were conjugated to 7-amino-1,3-naphthalenedisulfonic acid by reductive amination. Each oligosaccharide fluorescent conjugate was purified by preparative gradient PAGE, semi-dry electrotransfer to a pos.-charged nylon membrane, and recovered by washing the membrane with a salt solution The N-acetylchitohexaose-fluorescent conjugate and chitohexaose were exhaustively treated with 3 kinds of chitinases from Serratia marcescens, Streptomyces griseus, and green onion (Allium fistulosum). The bands were visualized under long-UV light. Anal. of reaction products provided information on the action of chitinases from different sources.
CC 7-1 (Enzymes)

L167 ANSWER 25 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 27
ACCESSION NUMBER: 1989:88012 CAPLUS
DOCUMENT NUMBER: 110:88012
TITLE: Structural features of heparin and their effect on heparin cofactor II mediated inhibition of thrombin
AUTHOR(S): **Kim, Y. S.; Linhardt, R. J.**
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Thrombosis Research (1989), 53(1), 55-71
CODEN: THBRAA; ISSN: 0049-3848
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Heparins from different species and tissues show similar levels of antithrombin (ATIII) and heparin cofactor II(HCII)-mediated anti-IIa activities. After fractionation, chains containing predominantly ATIII or HCII activities could not be separated Oligosaccharide mapping demonstrated that the concentration of an oligosaccharide comprising a portion of heparin's ATIII binding site in a particular heparin fraction correlates with the ATIII-mediated anti-IIa activity, but does not correlate with the

HCII-mediated anti-IIa activity. ATIII and HCII may not share a common binding site. Partial enzymic depolarization of heparin resulted in large oligosaccharides which could be purified and partially characterized. Although oligosaccharides of d.p. 18 and 20 showed significant ATIII- and HCII-mediated anti-IIa activities, no separation of these activities resulted. Min. chain length of dp18 was required for HCII-mediated anti-IIa activity.
CC 1-3 (Pharmacology)

L167 ANSWER 26 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 28
ACCESSION NUMBER: 1988:542049 CAPLUS
DOCUMENT NUMBER: 109:142049
TITLE: Homogeneous, structurally defined heparin-oligosaccharides with low anticoagulant activity inhibit the generation of the amplification pathway C3 convertase in vitro
AUTHOR(S): **Linhardt, Robert J.**; Rice, Kevin G.; **Kim, Yeong S.**; Engelken, John D.; Weiler, John M.
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Journal of Biological Chemistry (1988), 263(26), 13090-6
CODEN: JBCHA3; ISSN: 0021-9258
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Heparin-oligosaccharides were prepared by partial depolymn. of heparin by using purified flavobacterial heparinase. The resulting oligosaccharide mixture was then fractionated by using strong anion exchange-HPLC to produce individual oligosaccharide components of this mixture, with degree of polymerization ranging 2-16. These heparin-oligosaccharides were examined for both their anticoagulant activity and capacity to inhibit activation of the amplification pathway of complement. Although there was little difference among com. heparins, a correlation between mol. weight and activity to inhibit convertase generation was clearly established for heparin-oligosaccharides between d.p. 2 through 16. Heparin-oligosaccharides of degree of polymerization 10-16 (Mr 3888-5320) demonstrated up to 54% of heparin's activity on a molar basis (and up to 163% of heparin's activity on a weight basis) in inhibiting the amplification pathway of complement in vitro while showing almost no anticoagulant activity. Thus heparin-oligosaccharides with low anticoagulant activity have a high capacity to inhibit activation of the amplification pathway of complement in vitro. These studies, for the 1st time, completely sep. heparin's ability to inhibit complement activation from its anticoagulant activity.
CC 1-3 (Pharmacology)
Section cross-reference(s): 13, 15

L167 ANSWER 27 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 29
ACCESSION NUMBER: 1988:586768 CAPLUS
DOCUMENT NUMBER: 109:186768
TITLE: Mapping and quantification of the major oligosaccharide components of heparin
AUTHOR(S): **Linhardt, Robert J.**; Rice, Kevin G.; **Kim, Yeong S.**; Lohse, Daniel L.; Wang, Hui M.; Loganathan, Duraikkannu
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Biochemical Journal (1988), 254(3), 781-7
CODEN: BIJOAK; ISSN: 0306-3275
DOCUMENT TYPE: Journal

LANGUAGE: English
AB A new method of determining the oligosaccharide composition of com. glycosaminoglycan
heparin is described in which heparin was first depolymd. with heparin lyase (E.C. 4.2.2.7) and then analyzed by a single HPLC step. All 20 of the porcine and bovine heparins examined contained a small number of major oligosaccharide components, which on average comprised 86% of their mass. The 5 most abundant oligosaccharides have defined chemical structures. Although the relative abundance of oligosaccharides varied, the heparins examined were surprisingly similar. Porcine, bovine, low-Mr, and high and low antithrombin III (ATIII)-affinity heparins, however, each had distinctly different proportions of these major oligosaccharide components. The concentration of 1 of these 5 oligosaccharides, containing a portion of the ATIII
binding site, correlated with the anticoagulant activity of the ATIII-affinity-fractionated porcine-mucosal heparins from which it was derived. An addnl. oligosaccharide of undetd. structure was found in significant quantities in both bovine heparin and high ATIII-affinity porcine-mucosal heparin. The correlation between oligosaccharide concentration and anticoagulant activity suggests that the oligosaccharide is derived from a structural variant of the ATIII-binding site. Finally, for the heparins examined chondroitin/dermatan sulfate formed 0.6-7.4% of their mass.
CC 9-15 (Biochemical Methods)
Section cross-reference(s): 1, 44

L167 ANSWER 28 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 30
ACCESSION NUMBER: 1988:488599 CAPLUS
DOCUMENT NUMBER: 109:88599
TITLE: Microheterogeneity of plasma glycoproteins heparin cofactor II and antithrombin III and their carbohydrate analysis
AUTHOR(S): **Kim, Yeong Shik**; Lee, Kyung Bok; **Linhardt, Robert J.**
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Thrombosis Research (1988), 51(1), 97-104
CODEN: THBRAA; ISSN: 0049-3848
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Microheterogeneity was demonstrated for heparin cofactor II and antithrombin III. Their carbohydrate compns. were determined
CC 7-2 (Enzymes)

L167 ANSWER 29 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 31
ACCESSION NUMBER: 1987:439 CAPLUS
DOCUMENT NUMBER: 106:439
TITLE: Structure and activity of a unique heparin-derived hexasaccharide
AUTHOR(S): **Linhardt, Robert J.**; Rice, Kevin G.; Merchant, Zohar M.; **Kim, Yeong S.**; Lohse, Daniel L.
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Journal of Biological Chemistry (1986), 261(31), 14448-54
CODEN: JBCHA3; ISSN: 0021-9258
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A hexasaccharide representing a major sequence in porcine mucosal heparin has been enzymically prepared from heparin. Its structure was determined by an integrated approach using chemical, enzymic, and spectroscopic methods.

Two-dimensional 1H homonuclear COSY, C-H correlation NMR, and selective irradiation were used to assign many of the NMR resonances. In addition, new techniques including sulfate determination by ion chromatog. and Fourier transform
IR and californium plasma desorption mass spectroscopy have been applied, resulting in an unambiguous structural assignment of ΔIdoAp2S(1→4)-α-D-GlcNp2S6S(1→4)-α-L-IdoAp(1→4)-α-D-GlcNAcp6S(1→4)-β-D-GlcAp(1→4)-α-D-GlcNp2S3S6S [105575-57-3] (where ΔIdoA represents 4-deoxy-α-L-threo-hex-4-enopyranosyluronic acid, p represents pyranose, and GlcA and IdoA represent glucuronic and iduronic acid). This hexasaccharide contains a portion of the antithrombin [9000-94-6] III-binding site and has a Kd of 4 + 10-5M. Unlike other small heparin oligosaccharides, which are specific for coagulation factor Xa [9002-05-5], it inhibits both factors IIa [9002-04-4] and Xa equally through antithrombin III. This hexasaccharide may have the unique capacity to act primarily through heparin cofactor II [81604-65-1] to inhibit thrombin cofactor IIa) and shows over half of heparin's heparin cofactor II-mediated anti-factor IIa activity. These studies suggest the occurrence of contiguous binding sites on heparin for Xa, antithrombin III, and heparin cofactor II.

CC 1-8 (Pharmacology)

L167 ANSWER 30 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 32
ACCESSION NUMBER: 1986:16733 CAPLUS
DOCUMENT NUMBER: 104:16733
TITLE: Evidence of random structural features in the heparin polymer
AUTHOR(S): **Linhardt, Robert J.**; Merchant, Zohar M.; Rice, K. G.; **Kim, Y. S.**; Fitzgerald, Gerald L.; Grant, Arthur C.; Langer, Robert
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Biochemistry (1985), 24(26), 7805-10
CODEN: BICHAW; ISSN: 0006-2960
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The 1st use of computer-simulation studies to examine the structure of heparin is reported. The product distributions obtained when porcine mucosal heparins were depolymd. with heparinase were compared to computer-simulated distributions. The modeled distribution was relatively unaffected by the polydispersity and mol. weight of heparin. However, the percent of heparinase-cleavable glycosidic linkages and their distribution throughout the polymer resulted in a marked change in the simulated product distribution. The similarity between exptl. observed and computer-simulated product distributions is consistent with the random distribution of heparinase-cleavable sites in porcine mucosal heparin. Finally, a random distribution of N-acetyl residues with respect to heparinase-cleavable sites was exptl. observed

CC 6-4 (General Biochemistry)
Section cross-reference(s): 33

L167 ANSWER 31 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 33
ACCESSION NUMBER: 1985:578553 CAPLUS
DOCUMENT NUMBER: 103:178553
TITLE: Structure of heparin-derived tetrasaccharides
AUTHOR(S): Merchant, Z. M.; **Kim, Y. S.**; Rice, K. G.; **Linhardt, R. J.**
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Biochemical Journal (1985), 229(2), 369-77
CODEN: BIJOAK; ISSN: 0306-3275

DOCUMENT TYPE: Journal
LANGUAGE: English
AB The structure of heparin was examined by characterizing a disaccharide and five of the more than a dozen tetrasaccharide components obtained by its depolymn. with flavobacterial heparinase. Enzymic depolymn. of porcine mucosal heparin results in a mixture of di-, tetra-, hexa- and higher oligosaccharides. The di- and tetrasaccharide components represent 75mol/100mol of these heparin fragments. Ion-exchange chromatog. indicates the presence of only one disaccharide, ΔIdu2S(1→4)-α-D-GlcNS6S (where Idu is iduronic acid, ΔIdu is 4-deoxy-α-L-threo-hex-4-enopyranosyluronic acid, GlcN is glucosamine, GlcA is glucuronic acid and S is sulfate), but results in the solution of five major and at least seven minor tetrasaccharide components. The structures of the disaccharide and five major tetrasaccharides were determined by chemical, enzymic, electrophoretic, and spectroscopic methods, including 13C, 1H NMR and fast atom bombardment mass spectrometry. The structure of these five tetrasaccharides are: ΔIdu2S(1→4)-α-D-GlcNS6S(1→4)-α-L-Idu2S(1→4)-α-D-GlcNS6S; ΔIdu2S(1→4)-α-D-GlcNS6S(1→4)-β-D-GlcA(1→4)-α-D-GlcNS6S; ΔIdu2S(1→4)-α-D-GlcNS(1→4)-β-D-GlcA(1→4)-α-D-GlcNS6S; ΔIdu2S(1→4)-α-D-GlcNAc(1→4)-β-D-GlcA(1→4)-α-D-GlcNS6S; and ΔIdu2S(1→4)-α-D-GlcNAc(1→4)-α-L-Idu(1→4)-α-D-GlcNS6S. The disaccharide and the five major tetrasaccharides do not possess significant anticoagulant activity.
CC 33-8 (Carbohydrates)

L167 ANSWER 32 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 34
ACCESSION NUMBER: 1985:592544 CAPLUS
DOCUMENT NUMBER: 103:192544
TITLE: High-performance liquid chromatographic separation of heparin-derived oligosaccharides
AUTHOR(S): Rice, K. G.; **Kim, Y. S.**; Grant, A. C.; Merchant, Z. M.; **Linhardt, R. J.**
CORPORATE SOURCE: Coll. Pharm., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Analytical Biochemistry (1985), 150(2), 325-31
CODEN: ANBCA2; ISSN: 0003-2697
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Heparin was enzymically depolymd. with heparinase (heparin lyase (EC 4.2.2.7)) and then sep. into di-, tetra-, hexa-, octa-, and decasaccharide mixts. by low-pressure gel-permeation chromatog. (GPC). These sized mixts. were resolved by strong anion-exchange (SAX) HPLC into multiple components. The fractions from the SAX-HPLC were collected and characterized for size by GPC-HPLC and sulfate content by ion chromatog. This study provides detailed method for the separation of larger and more highly sulfated oligosaccharides than previously reported. It describes the 1st use of ion chromatog. for the accurate determination of the sulfate content of heparin oligosaccharides, a method which can also be applied to heparin and other glycosaminoglycans.
CC 9-3 (Biochemical Methods)

L167 ANSWER 33 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 35
ACCESSION NUMBER: 1985:404756 CAPLUS
DOCUMENT NUMBER: 103:4756
TITLE: Small heparin fragments regulate the amplification pathway of complement
AUTHOR(S): Sharath, Murali D.; Merchant, Zohar M.; **Kim, Yeong S.**; Rice, Kevin G.; **Linhardt, Robert**

J.; Weiler, John M.
CORPORATE SOURCE: Dep. Intern. Med., Veterans Adm. Med. Cent., Iowa City, IA, 52242, USA
SOURCE: Immunopharmacology (1985), 9(2), 73-80
CODEN: IMMUDP; ISSN: 0162-3109
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Heparin is a highly sulfated, polydisperse and heterogeneous glycosaminoglycan which has been well characterized for its ability to regulate multiple sites in the complement cascade. Although previous studies demonstrated the relation between degree of sulfation, particularly O-sulfation, and complement-inhibiting capacity, they left unclear the relation between the size of the heparin mol. and its ability to inhibit complement. Therefore, although the structure-activity relation for heparin is well understood for anticoagulant activity, it is ill defined for the complement system. The present studies were designed to examine depolymd. heparin to determine which fragments were capable of inhibiting amplification pathway activation. As the size of the mol. increased, the ability to regulate complement increased; below 1000 daltons the fragments were essentially inactive and above 3500 they had the same activity as com. heparin. Furthermore, the 5 major tetrasaccharides of heparin were analyzed, and the degree of sulfation did correlate with the ability to inhibit complement. These studies have for the 1st time begun to examine the minimal structural requirements for heparin to regulate complement.
CC 15-4 (Immunochemistry)

L167 ANSWER 34 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:1069968 CAPLUS
DOCUMENT NUMBER: 142:458725
TITLE: Nucleolin: **acharan sulfate**-binding protein on the surface of cancer cells
AUTHOR(S): Joo, Eun Ji; Ten Dam, Gerdy B.; Van Kuppevelt, Toin H.; Toida, Toshihiko; **Linhardt, Robert J.**; **Kim, Yeong Shik**
CORPORATE SOURCE: Natural Products Research Institute, College of Pharmacy, Seoul National University, Seoul, 110-460, S. Korea
SOURCE: Glycobiology (2004), Volume Date 2005, 15(1), 1-9
CODEN: GLYCE3; ISSN: 0959-6658
PUBLISHER: Oxford University Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Glycosaminoglycans (GAGs) are complex polysaccharides that participate in the regulation of physiol. processes through the interactions with a wide variety of proteins. **Acharan** sulfate (AS), isolated from the giant African snail Achatina fulica, primarily consists of the repeating disaccharide structure α-D-N-acetylglucosaminyl (1 4) 2-sulfoiduronic acid. Exogenous AS was injected s.c. near the tumor tissue in C57BL/6 mice that had been implanted with Lewis lung carcinoma cells (LLCs). The location of AS in the tumor was assessed by staining of sectioned tissues with alcian blue and periodic acid-Schiff (PAS) reagent. In vitro assays indicated binding of cells to 50 μg/mL AS (or heparin) after a 5-h incubation. Immunofluorescence assays, using anti-AS antibody, detected AS at the cell surface. The outer-surface of LLCs were next biotinylated to identify the AS-binding proteins. Biotinylated cells were lysed, and the lysates were fractionated on the AS affinity column using a stepwise salt gradient (0, 0.1, 0.3, 0.5, 0.7, 1.0, and 2.0 M). The fractions were analyzed by SDS-PAGE with silver staining and western blotting. We focused on the proteins with high affinity for AS (eluting

at 1 M NaCl) and detected only two bands by western blotting. ESI Q-TOF MS anal. of one of these bands, mol. weight .apprx.110 kDa, showed it to be nucleolin. A phosphorylated form of nucleolin on the surface of cells acts as a cell surface receptor for a variety of ligands, including growth factors (i.e., basic fibroblast growth factor) and chemokines (i.e., midkine). These results show that nucleolin is one of several AS-binding proteins and suggest that AS might demonstrate its tumor growth inhibitory activity by binding the nucleolin receptor protein on the surface of cancer cells.

CC 6-3 (General Biochemistry)

ST nucleolin **acharan sulfate** protein membrane cancer

IT Lung, neoplasm
(carcinoma; purification and characterization of nucleolin, a **acharan sulfate**-binding protein of cell membrane of cancer cells)

IT Proteins
RL: BSU (Biological study, unclassified); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(nucleolins; purification and characterization of nucleolin, a **acharan sulfate**-binding protein of cell membrane of cancer cells)

IT Carcinoma
(pulmonary; purification and characterization of nucleolin, a **acharan sulfate**-binding protein of cell membrane of cancer cells)

IT Cell membrane
Neoplasm
(purification and characterization of nucleolin, a **acharan sulfate**-binding protein of cell membrane of cancer cells)

IT **192662-57-0, Acharan sulfate**
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(purification and characterization of nucleolin, a **acharan sulfate**-binding protein of cell membrane of cancer cells)

IT **192662-57-0, Acharan sulfate**
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(purification and characterization of nucleolin, a **acharan sulfate**-binding protein of cell membrane of cancer cells)

RN 192662-57-0 CAPLUS

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L167 ANSWER 35 OF 47 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:34040 CAPLUS

DOCUMENT NUMBER: 128:97878

TITLE: Glycosaminoglycans can influence fibroblast growth factor-2 mitogenicity without significant growth factor binding. [Erratum to document cited in CA127:117569]

AUTHOR(S): Wang, Huiming; Toida, Toshihiko; **Kim, Yeong Shik**; Capila, Ishan; Hileman, Ronald E.; Bernfield, Merton; **Linhardt, Robert J.**

CORPORATE SOURCE: Department of Pediatrics, Harvard Medical School, Boston, MA, 02115, USA

SOURCE: Biochemical and Biophysical Research Communications (1998), 242(1), 248
CODEN: BBRCA9; ISSN: 0006-291X

PUBLISHER: Academic Press

DOCUMENT TYPE: Journal
LANGUAGE: English
AB On page 372, the legend to Fig. 3 misidentified the square, circle, and open and closed triangles used in the figure; Fig. 3 and its correct legend are given.
CC 2-5 (Mammalian Hormones)
IT 9005-49-6, Heparin, biological studies 106096-93-9, Basic fibroblast growth factor **192662-56-9**, N-Sulfoacharan sulfate **192662-57-0, Acharan sulfate**
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(glycosaminoglycans influence FGF-2 mitogenicity without growth factor binding (Erratum))
IT **192662-56-9**, N-Sulfoacharan sulfate **192662-57-0, Acharan sulfate**
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(glycosaminoglycans influence FGF-2 mitogenicity without growth factor binding (Erratum))
RN 192662-56-9 CAPLUS
CN Acharan, N-deacetyl-N-sulfo, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L167 ANSWER 36 OF 47 MEDLINE on STN DUPLICATE 3
ACCESSION NUMBER: 2005009866 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15329357
TITLE: Nucleolin: **acharan sulfate**-binding protein on the surface of cancer cells.
AUTHOR: Joo Eun Ji; ten Dam Gerdy B; van Kuppevelt Toin H; Toida Toshihiko; **Linhardt Robert J; Kim Yeong Shik**
CORPORATE SOURCE: Natural Products Research Institute, College of Pharmacy, Seoul National University, 28 Yeonkun-Dong, Jongno-Ku, Seoul 110-460, Korea.
SOURCE: Glycobiology, (2005 Jan) 15 (1) 1-9. Electronic Publication: 2004-08-25.
Journal code: 9104124. ISSN: 0959-6658.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200505
ENTRY DATE: Entered STN: 20050108
Last Updated on STN: 20050517
Entered Medline: 20050516
ABSTRACT:
Glycosaminoglycans (GAGs) are complex polysaccharides that participate in the regulation of physiological processes through the interactions with a wide variety of proteins. **Acharan sulfate** (AS), isolated from

the giant African snail Achatina fulica, primarily consists of the repeating disaccharide structure alpha-D-N-acetylglucosaminyl (1-->4) 2-sulfoiduronic acid. Exogenous AS was injected subcutaneously near the tumor tissue in C57BL/6 mice that had been implanted with Lewis lung carcinoma cells (LLCs). The location of AS in the tumor was assessed by staining of sectioned tissues with alcian blue and periodic acid-Schiff (PAS) reagent. In vitro assays indicated binding of cells to 50 microg/ml AS (or heparin) after a 5-h incubation. Immunofluorescence assays, using anti-AS antibody, detected AS at the cell surface. The outer-surface of LLCs were next biotinylated to identify the AS-binding proteins. Biotinylated cells were lysed, and the lysates were fractionated on the AS affinity column using a stepwise salt gradient (0, 0.1, 0.3, 0.5, 0.7, 1.0, and 2.0 M). The fractions were analyzed by SDS-PAGE with silver staining and western blotting. We focused on the proteins with high affinity for AS (eluting at 1 M NaCl) and detected only two bands by western blotting. ESI Q-TOF MS analysis of one of these bands, molecular weight approximately 110 kDa, showed it to be nucleolin. A phosphorylated form of nucleolin on the surface of cells acts as a cell surface receptor for a variety of ligands, including growth factors (i.e., basic fibroblast growth factor) and chemokines (i.e., midkine). These results show that nucleolin is one of several AS-binding proteins and suggest that AS might demonstrate its tumor growth inhibitory activity by binding the nucleolin receptor protein on the surface of cancer cells.

CONTROLLED TERM: Amino Acid Sequence
Animals
Blotting, Western
Cell Adhesion
Cell Line, Tumor
*Cell Membrane: ME, metabolism
Electrophoresis, Polyacrylamide Gel
*Glycosaminoglycans: ME, metabolism
Humans
Mice
Mice, Inbred C57BL
Molecular Sequence Data
*Neoplasms: ME, metabolism
*Neoplasms: PA, pathology
Phosphoproteins: CH, chemistry
Phosphoproteins: IP, isolation & purification
*Phosphoproteins: ME, metabolism
RNA-Binding Proteins: CH, chemistry
RNA-Binding Proteins: IP, isolation & purification
*RNA-Binding Proteins: ME, metabolism
Research Support, Non-U.S. Gov't
Spectrum Analysis, Mass

CHEMICAL NAME: 0 (Glycosaminoglycans); 0 (Phosphoproteins); 0 (RNA-Binding Proteins); 0 (**acharan sulfate**); 0 (nucleolin)

L167 ANSWER 37 OF 47 MEDLINE on STN DUPLICATE 26
ACCESSION NUMBER: 91297473 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2068567
TITLE: Molecular profile and mapping of dermatan sulfates from different origins.
AUTHOR: **Linhardt R J**; al-Hakim A; Liu S Y; **Kim Y S**; Fareed J
CORPORATE SOURCE: Division of Medicinal and Natural Products Chemistry, College of Pharmacy, University of Iowa, Iowa City 52242.
CONTRACT NUMBER: GM38060 (NIGMS)
HL29797 (NHLBI)
SOURCE: Seminars in thrombosis and hemostasis, (1991) 17 Suppl 1

15-22.
Journal code: 0431155. ISSN: 0094-6176.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199108
ENTRY DATE: Entered STN: 19910901
Last Updated on STN: 19910901
Entered Medline: 19910809

ABSTRACT:
A method for characterization and molecular profiling of acidic polysaccharides (such as dermatan sulfates) has been developed. A variety of dermatan sulfates, fractionated dermatan sulfates and low molecular weight dermatan sulfates, were examined. First, bacterial lyase-type enzymes (chondroitinase ABC) were used to depolymerize the polysaccharides. Then, mapping of these oligosaccharides (comparable to peptide mapping of proteins) was performed using gradient PAGE and SAX-HPLC. Bands and peaks observed in these maps were identified using oligosaccharide standards of defined chemical structures and physical properties. The resulting map can be used to point to structural differences among these dermatan sulfates regarding their size, charge, degree of sulfation, and contamination. Fine details of fragmentation patterns and absence or presence of contaminants were detected by silver staining of gels. These differences, particularly the content of----4)alpha-IdoA(1----3)-beta-D-GalNAc4S6S(1----sequences (detected using SAX-HPLC as delta UA(1----3)-beta-D-GalNAc4S6S) may play an important role influencing the activity of dermatan sulfates to potentiate HC II inhibition of Factor IIa.

CONTROLLED TERM: Check Tags: Comparative Study
Animals
Carbohydrate Sequence
Cattle
Chromatography, Gel
Chromatography, High Pressure Liquid
*Dermatan Sulfate: CH, chemistry
Dermatan Sulfate: IP, isolation & purification
Electrophoresis, Polyacrylamide Gel
Intestines: CH, chemistry
Molecular Sequence Data
Mucous Membrane: CH, chemistry
Research Support, Non-U.S. Gov't
Research Support, U.S. Gov't, P.H.S.
Skin: CH, chemistry
Swine
CAS REGISTRY NO.: 24967-94-0 (Dermatan Sulfate)

L167 ANSWER 38 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
ACCESSION NUMBER: 1999:258319 BIOSIS
DOCUMENT NUMBER: PREV199900258319
TITLE: Heparin, chemically modified heparins, and **Acharan sulfate** differentially regulate complement activity.
AUTHOR(S): Edens, R. Erik [Reprint author]; **Kim, Yeong S.**; Wu, Song J.; **Linhardt, Robert J.**; Caldwell, Elizabeth B.; Weiler, John M.
CORPORATE SOURCE: Pediatrics, University of Iowa, Iowa City, IA, USA
SOURCE: Pediatric Research, (April, 1999) Vol. 45, No. 4 PART 2, pp. 22A. print.
Meeting Info.: Annual Meeting of the American Pediatric Society and the Society for Pediatric Research. San

Francisco, California, USA. May 1-4, 1999.
CODEN: PEREBL. ISSN: 0031-3998.

DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
Conference; (Meeting Poster)

LANGUAGE: English

ENTRY DATE: Entered STN: 2 Jul 1999
Last Updated on STN: 2 Jul 1999

CONCEPT CODE: Pharmacology - Immunological processes and allergy 22018
Metabolism - Carbohydrates 13004
Metabolism - Proteins, peptides and amino acids 13012
Immunology - Immunopathology, tissue immunology 34508
Pharmacology - Drug metabolism and metabolic stimulators 22003
General biology - Symposia, transactions and proceedings 00520
Biochemistry studies - Proteins, peptides and amino acids 10064
Biochemistry studies - Carbohydrates 10068
Biophysics - Molecular properties and macromolecules 10506

INDEX TERMS: Major Concepts
Immune System (Chemical Coordination and Homeostasis); Pharmacology

INDEX TERMS: Chemicals & Biochemicals
acharan sulfate: immunologic-drug, complement activity regulator; chemically modified heparin: immunologic-drug, complement activity regulator; heparin: immunologic-drug, complement activity regulator

INDEX TERMS: Miscellaneous Descriptors
Meeting Abstract; Meeting Poster

ORGANISM: Classifier
Animalia 33000
Super Taxa
Animalia
Organism Name
animal: animal model
Taxa Notes
Animals

REGISTRY NUMBER: **192662-57-0 (acharan sulfate)**
9005-49-6 (heparin)

L167 ANSWER 39 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 1997:420074 BIOSIS
DOCUMENT NUMBER: PREV199799719277
TITLE: **Acharan sulfate** and **acharan sulfate**-derived new oligosaccharides.
AUTHOR(S): **Kim, Yeong Shik** [Reprint author]; Ahn, Mi Young [Reprint author]; Shin, Kuk Hyun [Reprint author]; Woo, Song Ji [Reprint author]; Chun, Moon Woo; Kim, Dong-Hyun; Toida, Toshihiko; **Linhardt, Robert J.**
CORPORATE SOURCE: Natural Prod. Res. Inst., Seoul Natl. Univ., Seoul, South Korea
SOURCE: FASEB Journal, (1997) Vol. 11, No. 9, pp. A995.
Meeting Info.: 17th International Congress of Biochemistry and Molecular Biology in conjunction with the Annual Meeting of the American Society for Biochemistry and Molecular Biology. San Francisco, California, USA. August

24-29, 1997.
CODEN: FAJOEC. ISSN: 0892-6638.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 8 Oct 1997
Last Updated on STN: 21 Nov 1997
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Biochemistry studies - Carbohydrates 10068
Biophysics - Methods and techniques 10504
INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics; Methods and Techniques
INDEX TERMS: Chemicals & Biochemicals
ACHARAN SULFATE
INDEX TERMS: Miscellaneous Descriptors
ACHARAN SULFATE;
ALPHA-D-N-ACETYLGLUCOSAMINYL 2-SULFO-IDURONIC ACID; ANALYTICAL METHOD; BIOCHEMISTRY AND BIOPHYSICS; GIANT AFRICAN SNAIL; GLYCOSAMINOGLYCAN; HIGH PERFORMANCE LIQUID CHROMATOGRAPHY; NMR SPECTROSCOPY
ORGANISM: Classifier
Gastropoda 61200
Super Taxa
Mollusca; Invertebrata; Animalia
Organism Name
Achatina fulica
Taxa Notes
Animals, Invertebrates, Mollusks
REGISTRY NUMBER: **192662-57-0 (ACHARAN SULFATE)**

L167 ANSWER 40 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
ACCESSION NUMBER: 1988:368228 BIOSIS
DOCUMENT NUMBER: PREV198835052841; BR35:52841
TITLE: FUNDAMENTAL OLIGOSACCHARIDES DERIVED FROM HEPARIN AND THEIR CORRELATION TO ANTICOAGULANT ACTIVITY.
AUTHOR(S): **LINHARDT R J** [Reprint author]; RICE K G; **KIM Y S**; LOHSE D L; WANG H M; LOGANATHAN D
CORPORATE SOURCE: DIV MED AND NATURAL PRODUCTS CHEM, COLL PHARMACY, UNIV IOWA, IOWA CITY, IOWA 52242, USA
SOURCE: Abstracts of Papers Chemical Congress of North America, (1988) Vol. 3, No. 1, pp. CARB 100.
Meeting Info.: THIRD CHEMICAL CONGRESS OF NORTH AMERICA HELD AT THE 195TH AMERICAN CHEMICAL SOCIETY MEETING, TORONTO, ONTARIO, CANADA, JUNE 5-10, 1988. ABSTR PAP CHEM CONGR NORTH AM.
DOCUMENT TYPE: Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 9 Aug 1988
Last Updated on STN: 9 Aug 1988
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Biochemistry studies - Carbohydrates 10068
Pharmacology - Blood and hematopoietic agents 22008
INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics; Pharmacology
INDEX TERMS: Miscellaneous Descriptors

ABSTRACT
REGISTRY NUMBER: 9005-49-6 (HEPARIN)

L167 ANSWER 41 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
ACCESSION NUMBER: 1987:246464 BIOSIS
DOCUMENT NUMBER: PREV198732121722; BR32:121722
TITLE: GRADIENT PAGE AND STRONG ANION EXCHANGE SAX HPLC AS ANALYTICAL TOOLS FOR SEQUENCING THE HEPARIN POLYMER.
AUTHOR(S): RICE K G [Reprint author]; **KIM Y S**; LOHSE D L; **LINHARDT R J**
CORPORATE SOURCE: DIV MEDICINAL NAT PROD CHEM, COLL PHARMACY, UNIV IOWA, IOWA CITY, IA 52242, USA
SOURCE: Abstracts of Papers American Chemical Society, (1987) Vol. 193.
Meeting Info.: 193RD AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, DENVER, COLORADO, USA, APRIL 5-10, 1987. ABSTR PAP AM CHEM SOC.
CODEN: ACSRAL. ISSN: 0065-7727.
DOCUMENT TYPE: Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 26 May 1987
Last Updated on STN: 26 May 1987
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Biochemistry methods - Carbohydrates 10058
Biochemistry studies - Carbohydrates 10068
Biophysics - Methods and techniques 10504
Biophysics - Molecular properties and macromolecules 10506
INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics
INDEX TERMS: Miscellaneous Descriptors
ABSTRACT POLYACRYLAMIDE GEL ELECTROPHORESIS HIGH PERFORMANCE LIQUID CHROMATOGRAPHY
REGISTRY NUMBER: 9005-49-6D (HEPARIN)
9003-05-8 (POLYACRYLAMIDE)

L167 ANSWER 42 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
ACCESSION NUMBER: 1985:133146 BIOSIS
DOCUMENT NUMBER: PREV198529023142; BR29:23142
TITLE: SMALL HEPARIN FRAGMENTS INHIBIT COMPLEMENT ACTIVATION.
AUTHOR(S): **LINHARDT R J** [Reprint author]; SHARATH M D; MERCHANT Z M; **KIM Y S**; RICE K G; WEILER J M
CORPORATE SOURCE: DIV MEDICINAL CHEMISTRY, COLLEGE OF PHARMACY, UNIVERSITY OF IOWA, IOWA CITY, IOWA 52242, USA
SOURCE: Federation Proceedings, (1985) Vol. 44, No. 4, pp. 989.
Meeting Info.: 69TH ANNUAL MEETING OF THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY, ANAHEIM, CALIF., USA, APR. 21-26, 1985. FED PROC.
CODEN: FEPRA7. ISSN: 0014-9446.
DOCUMENT TYPE: Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Biochemistry studies - Proteins, peptides and amino acids 10064

Biochemistry studies - Carbohydrates 10068
Biophysics - Molecular properties and macromolecules 10506
Enzymes - Physiological studies 10808
Metabolism - Proteins, peptides and amino acids 13012
Blood - Blood and lymph studies 15002
Immunology - General and methods 34502
Immunology - Immunopathology, tissue immunology 34508

INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics; Blood and Lymphatics (Transport and Circulation); Enzymology (Biochemistry and Molecular Biophysics); Immune System (Chemical Coordination and Homeostasis); Metabolism

INDEX TERMS: Miscellaneous Descriptors
ABSTRACT ALTERNATIVE PATHWAY CONVERTASE GENERATION

REGISTRY NUMBER: 9005-49-6 (HEPARIN)

L167 ANSWER 43 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 1986:46797 BIOSIS
DOCUMENT NUMBER: PREV198630046797; BR30:46797
TITLE: VERY LOW MOLECULAR WEIGHT HEPARIN FRAGMENT INHIBITION OF COMPLEMENT ACTIVATION.
AUTHOR(S): **LINHARDT R J** [Reprint author]; **KIM Y S**; MERCHANT Z M; RICE G H; WEILER J M
CORPORATE SOURCE: DEP MED CHEM NATURAL PRODUCTS, COLLEGE PHARMACY, UNIV IOWA, IOWA CITY, IOWA, USA
SOURCE: Complement, (1985) Vol. 2, No. 1, pp. 49.
Meeting Info.: 11TH INTERNATIONAL COMPLEMENT WORKSHOP, MIAMI, FLA., USA, NOV. 3-5, 1985. COMPLEMENT.
CODEN: CMPLDF. ISSN: 0253-5076.
DOCUMENT TYPE: Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 25 Apr 1986
Last Updated on STN: 25 Apr 1986
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Biochemistry studies - Proteins, peptides and amino acids 10064
Biochemistry studies - Carbohydrates 10068
Biophysics - Molecular properties and macromolecules 10506
Blood - Blood and lymph studies 15002
Immunology - Immunopathology, tissue immunology 34508
INDEX TERMS: Major Concepts
Blood and Lymphatics (Transport and Circulation); Immune System (Chemical Coordination and Homeostasis)
INDEX TERMS: Miscellaneous Descriptors
ABSTRACT
REGISTRY NUMBER: 9005-49-6 (HEPARIN)

L167 ANSWER 44 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 1986:79732 BIOSIS
DOCUMENT NUMBER: PREV198630079732; BR30:79732
TITLE: BIOLOGICAL ACTIVITY OF VERY LOW MOLECULAR WEIGHT HEPARIN OLIGOSACCHARIDES.
AUTHOR(S): MERCHANT Z M [Reprint author]; **KIM Y S**; RICE K G; LOHSE D L; **LINHARDT R J**

CORPORATE SOURCE: DIV MEDICINAL CHEM NAT PRODUCTS, COLL PHARMACY, UNIV IOWA, IOWA CITY, IA 52242, USA
SOURCE: Abstracts of Papers American Chemical Society, (1985) Vol. 190.
Meeting Info.: 190TH AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, CHICAGO, ILL., USA, SEPT. 8-13, 1985. ABSTR PAP AM CHEM SOC.
CODEN: ACSRAL. ISSN: 0065-7727.
DOCUMENT TYPE: Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 25 Apr 1986
Last Updated on STN: 25 Apr 1986
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Biochemistry studies - Proteins, peptides and amino acids 10064
Biochemistry studies - Carbohydrates 10068
Biophysics - Molecular properties and macromolecules 10506
Cardiovascular system - Blood vessel pathology 14508
Blood - Blood and lymph studies 15002
Endocrine - General 17002
Pharmacology - Blood and hematopoietic agents 22008
Pharmacology - Cardiovascular system 22010
INDEX TERMS: Major Concepts
Blood and Lymphatics (Transport and Circulation); Cardiovascular System (Transport and Circulation); Endocrine System (Chemical Coordination and Homeostasis); Pharmacology
INDEX TERMS: Miscellaneous Descriptors
ABSTRACT ANTICOAGULANT-DRUG ANTIATHEROSCLEROTIC COMPLEMENT INHIBITION
REGISTRY NUMBER: 9005-49-6 (HEPARIN)

L167 ANSWER 45 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
ACCESSION NUMBER: 1986:79762 BIOSIS
DOCUMENT NUMBER: PREV198630079762; BR30:79762
TITLE: ISOLATION AND CHARACTERIZATION OF LOW MOLECULAR WEIGHT HEPARIN DERIVED OLIGOSACCHARIDES.
AUTHOR(S): MERCHANT Z M [Reprint author]; **KIM Y S**; RICE K G; LOHSE D L; **LINHARDT R J**
CORPORATE SOURCE: DIV MED CHEM NAT PRODUCTS, COLL PHARMACY, UNIV IOWA, IOWA CITY, IA 52242, USA
SOURCE: Abstracts of Papers American Chemical Society, (1985) Vol. 190.
Meeting Info.: 190TH AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, CHICAGO, ILL., USA, SEPT. 8-13, 1985. ABSTR PAP AM CHEM SOC.
CODEN: ACSRAL. ISSN: 0065-7727.
DOCUMENT TYPE: Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 25 Apr 1986
Last Updated on STN: 25 Apr 1986
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Biochemistry methods - Carbohydrates 10058
Biochemistry studies - Carbohydrates 10068

Biophysics - Molecular properties and macromolecules 10506
Cardiovascular system - Blood vessel pathology 14508
Blood - Blood, lymphatic and reticuloendothelial pathologies 15006
Pharmacology - Blood and hematopoietic agents 22008
Pharmacology - Cardiovascular system 22010
INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics; Blood and Lymphatics (Transport and Circulation); Cardiovascular System (Transport and Circulation); Pharmacology
INDEX TERMS: Miscellaneous Descriptors
ABSTRACT ANTICOAGULANT-DRUG ANTITHROMBOTIC STRUCTURE ACTIVITY RELATIONSHIP
REGISTRY NUMBER: 9005-49-6 (HEPARIN)

L167 ANSWER 46 OF 47 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN
ACCESSION NUMBER: 1985:87569 BIOSIS
DOCUMENT NUMBER: PREV198528087569; BR28:87569
TITLE: ENZYMATIC PREPARATION OF ANTICOAGULANTS FROM HEPARIN.
AUTHOR(S): **LINHARDT R J** [Reprint author]; MERCHANT Z M; **KIM Y S**; RICE K G
CORPORATE SOURCE: DIV MED CHEM, UNIV IOWA COLL PHARMACY, IOWA CITY, IOWA 52242, USA
SOURCE: Abstracts of Papers American Chemical Society, (1984) Vol. 188.
Meeting Info.: 188TH AMERICAN CHEMICAL SOCIETY MEETING, PHILADELPHIA, PA., USA, AUG. 26-31, 1984. ABSTR PAP AM CHEM SOC.
CODEN: ACSRAL. ISSN: 0065-7727.
DOCUMENT TYPE: Conference; (Meeting)
FILE SEGMENT: BR
LANGUAGE: ENGLISH
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Comparative biochemistry 10010
Biochemistry methods - Carbohydrates 10058
Biochemistry studies - Proteins, peptides and amino acids 10064
Biochemistry studies - Carbohydrates 10068
Biophysics - Molecular properties and macromolecules 10506
Enzymes - Methods 10804
Enzymes - Chemical and physical 10806
Pathology - Therapy 12512
Metabolism - Carbohydrates 13004
Pharmacology - Drug metabolism and metabolic stimulators 22003
Pharmacology - Clinical pharmacology 22005
Pharmacology - Blood and hematopoietic agents 22008
Microbiological apparatus, methods and media 32000
Food microbiology - Biosynthesis, bioassay and fermentation 39007
INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics; Enzymology (Biochemistry and Molecular Biophysics); Pharmacology
INDEX TERMS: Miscellaneous Descriptors
ABSTRACT MICROBE PHARMACOKINETICS BIOTECHNOLOGY
REGISTRY NUMBER: 9005-49-6 (HEPARIN)

L167 ANSWER 47 OF 47 USPATFULL on STN
ACCESSION NUMBER: 2005:87847 USPATFULL
TITLE: **Antitumor** inhibitors and use thereof
INVENTOR(S): **Linhardt, Robert J.**, Albany, NY, UNITED STATES
Kim, Yeong Shik, Seoul, KOREA, REPUBLIC OF

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005075312	A1	20050407
APPLICATION INFO.:	US 2004-786613	A1	20040223 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2003-449661P	20030224 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: Schwegman, Lundberg, Woessner & Kluth, P.A., P.O. Box 2938, Minneapolis, MN, 55402
NUMBER OF CLAIMS: 21
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 6 Drawing Page(s)
LINE COUNT: 660
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention provides pharmaceutical compositions for the treatment of **cancer** and inhibiting an increase in the volume or mass of a **tumor**, and methods for the treatment of **cancer** and inhibiting an increase in the volume or mass of a **tumor.**

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
TI **Antitumor** inhibitors and use thereof
IN **Linhardt, Robert J.**, Albany, NY, UNITED STATES
IN **Kim, Yeong Shik**, Seoul, KOREA, REPUBLIC OF
AB The present invention provides pharmaceutical compositions for the treatment of **cancer** and inhibiting an increase in the volume or mass of a **tumor**, and methods for the treatment of **cancer** and inhibiting an increase in the volume or mass of a **tumor.**
SUMM [0003] **Angiogenesis**, or neovascularization, is the formation of new capillaries from preexisting blood vessels and is a fundamental process involved in a. . . of physiological (Folkman, 1971; Folkman, 1972; Folkman and Shing, 1992) and pathophysiological processes (Folkman, 1995; Carmeliet and Jain, 2000). In **cancer**, this process contributes to the progressive growth and metastasis of solid **tumors.** (Liotta et al., 1991).
SUMM [0004] **Tumor angiogenesis** is regulated by the production of **angiogenic** stimulators including members of fibroblast growth factor (FGF) and vascular endothelial growth factor (VEGF) families (Colville-Nash and Willoughby, 1997; Kim et al., 1993). Drugs that interfere with **angiogenesis**, by halting the action of **angiogenic** proteins, might reduce the size of **tumors** and maintain them in a dormant state. **Angiogenic** inhibitors such as angiostatin and endostatin can modulate **angiogenesis** both at the primary site and at the downstream sites of metastasis (O'Reilly et al, 1994, 1997). The potential use of

these and other natural and synthetic **angiogenesis** inhibitors is currently being studied intensively by many laboratories (Mohan et al., 2000; Suh et al., 1997; Minamiguchi et al.,. . .

SUMM [0005] Heparin/heparan sulfate interacts with various **angiogenic** growth factors (Capila and Linhardt, 2002). **Angiogenic** growth factors induce response in target endothelial cells by binding to cognate cell-surface tyrosine kinase receptors (Gale and Yancopoulos, 1999). The interaction of heparin-binding growth factors to tyrosine kinase receptors is modulated by heparan sulfate proteoglycans. **Acharan sulfate** (AS) isolated from the giant African snail, Achatina fulica, is a novel member of glycosaminoglycan (GAG) family (Kim et al.,. . . HPLC-GPC analysis. Recently, we observed that AS interfered with heparin's bFGF mitogenicity in vitro, suggesting its possible utility as an **angiogenesis** inhibitor (Wang et al., 1997).

SUMM [0006] U.S. Pat. No. 6,028,061 describes and claims the use of AS in inhibiting **angiogenesis** based on its inhibition of FGF (fibroblast growth hormone). We have now discovered that AS has **antitumor** activity as demonstrated in both in vivo and in vitro assays. The in vivo **antitumor** activity is demonstrated against the **sarcoma** 180-induced solid **tumor** and primary **tumor** in LLC-bearing C57BL/6 mice. This is the first demonstration of in vivo **antitumor** activity using AS ever observed. Although more than 30 years ago it was hypothesized that **tumor** growth is **angiogenesis** dependent (Folkman, 1971) anti-**angiogenesis** activity does not predict in vivo **tumor** growth inhibition. Thus, the present invention provides a marked advance in the elucidation of useful in vivo anti-**tumor** agents.

SUMM [0007] The present invention provides pharmaceutical compositions for the treatment of **cancer** and for inhibiting an increase in the volume or mass of a **tumor** in a host in need of treatment. The present invention also provides methods for the treatment of **cancer** and for the inhibition of an increase in the volume or mass of a **tumor** in a host in need of treatment. Compounds which are the active ingredients of the compositions and methods of the. . .

SUMM [0009] The present invention is based on the discovery that **acharan sulfate** demonstrates in vivo anti-**tumor** activity. Thus, a novel method of inhibiting **tumor** growth and treating **cancer** is provided by the present invention. As used herein **acharan sulfate** means a glycosaminoglycan from the giant African snail, Achatina fulica having primarily the repeating disaccharide structure of α-D-N-acetylglucosaminyl 2-sulfoiduronic acid. . .

DRWD [0010] FIG. 1 depicts the structure of **acharan sulfate** . And the site of its structure where it can be cleaved using heparin lyase II.

DRWD [0011] FIG. 2 is a photograph of a control egg and one treated with **acharan sulfate** showing the effect of **acharan sulfate** on inhibition of **angiogenesis.**

DRWD [0012] FIG. 3 shows the effect of **acharan sulfate** on bFGF-induced **angiogenesis** in mouse model.

DRWD [0013] FIG. 4 shows the effect of **acharan sulfate** on calf pulmonary endothelial cell proliferation by MTT assay.

DRWD [0014] FIG. 5 shows the effect of **acharan sulfate** on **tumor** volume in Lewis lung **carcinoma**-bearing mice.

DRWD [0015] FIG. 6 shows the effect of **acharan sulfate** on **tumor** weight in Lewis lung **carcinoma**-bearing mice.

DRWD [0016] FIG. 7 shows effects of **acharan sulfate** on

tumor volume (A) and **tumor** weight (B) in **sarcoma** 180-bearing mice.

DRWD [0017] FIG. 8 shows effect of **acharan sulfate** on survival time of mice **sarcoma** with 180 ascitic **tumor** .

DETD [0018] **Acharan sulfate** is a glucosaminoglycan having a repeating disaccharide structure described as →4)-α-D-GlcNpAc(1→4)-α-L-IdoAp2S(1→, where GlcNpAc is 2-acetamido 2-deoxyglucopyranose, IdoAp is idopyranosyluronic acid. .

DETD . . . embodiment of the present invention is the use of and compositions comprising compounds of Formula I for the treatment of **cancer** or for inhibiting an increase in the mass or volume of a **tumor** in a patient in need of treatment wherein n is 4 to 100 and more preferably 4 to 50. The pharmaceutical compositions of the present invention are useful in the treatment of **cancer** and in the inhibition of an increase in the volume or mass of a **tumor** in a patient in need of treatment. The use of the compounds of Formula I is directed to a method of treating **cancer** and of inhibiting an increase in the mass or volume of a **tumor** in a patient in need of treatment.

DETD [0022] Described herein are experiments carried out to evaluate the **antiangiogenic** activity of **acharan sulfate.** We also show herein that **acharan sulfate** inhibits new blood vessel formation in the in vivo matrigel and chorioallantoic membrane assays. Additionally, we show that **acharan sulfate** has substantial **antitumor** activity against **sarcoma** 180-induced solid and primary **tumors** in Lewis lung **carcinoma**-bearing C57BL/6 mice.

DETD Preparation of **Acharan Sulfate**

DETD [0023] **Acharan sulfate** was isolated from the soft body tissue of the giant African snail by proteolysis of defatted tissue and purified by. . .

DETD Characterization of **Acharan Sulfate**

DETD [0025] The invention provides compositions and methods that can be used to treat **cancer** utilizing the compounds of Formula I. These compounds are shown herein to inhibit a gain in mass or volume of a **tumor.** Accordingly, these compounds may be administered to an animal in need of such treatment, including warm blooded animals, such as. . . art. Furthermore, these compounds may be formulated as pharmaceutical dosage forms containing an effective amount of the compound to inhibit **tumors** from gaining mass or volume. In addition, the compounds of the invention can be formulated as single unit dosage forms.. . .

DETD . . . effective dosage of a compound of Formulae I for inhibition of an increase in the volume or mass of a **tumor** or as an **anticancer** agent is extrapolated from the results of the in vivo studies set forth herein. The effective dosage is dependent not. . .

DETD [0038] Lewis lung **carcinoma** cells (American Type Cell Collection, Rockville, Md.) were maintained in DMEM supplemented with heat-inactivated 10% FBS (Life Technologies, Grand Island, N.Y.), 100 units/ml penicillin, and 100 μg/ml streptomycin. Calf pulmonary arterial endothelial (CPAE) cells and **sarcoma** 180 (Korea Cell Line Bank, Seoul, Korea) were cultured in RPMI 1640 media containing 10% FBS and 1% antibiotics in. . .

DETD [0039] The effect of **acharan sulfate** on the inhibition of **angiogenesis** was performed using the choroioallantoic membrane (CAM) assay. These assays essentially followed previously published procedures (Tanaka et al, 1986; Oikawa. . . half days later, sample-loaded thermanox coverslips (Nunc, Naperville, Ill.)

were air-dried and applied to the CAM surface for testing of **angiogenesis** inhibition by AS. Two days later, 1 ml of 10% fat emulsion (Intralipose) was injected into the chorioallantoic membrane and the avascular zone was observed under a dissecting microscope. Inhibition of **angiogenesis** was assessed when the avascular zone exceeded 3 mm. In order to abolish the possibility of contaminant in AS, the depolymerized product by heparinase II as described above was also tested for the **antiangiogenic** activity. The concentration of AS used in this assay was selected based on the concentration of heparin that had previously. . .

DETD . . . AS on the treated CAM is shown in FIG. 2 and Table 1.

TABLE 1

Effect of AS on chick embryonic **angiogenesis**

Compounds	Concentration (μg/egg)	Eggs showing antiangiogenesis.sup.a	Total eggs tested	% inhibition
Control (H.sub.2O)	--	3	54	5.6
Retinoic acid.sup.b	1	20	25	80.0
Acharan sulfate	50	2	40	5.0
depolymerization mixture				
Acharan sulfate I	5	14	29	48.3
Acharan sulfate II	10	15	27	55.6

.sup.a**Antiangiogeneis** was assessed when the avascular zone exceeded 3 mm.

.sup.bRetinoic acid was used as a positive control.

DETD [0042] Compared to the effect of vehicle as control, which did not have **antiangiogenic** activity in the treated CAM, AS at doses of 5 and 10 μg/pellet showed **antiangiogenic** activity of 48.3 and 55.6%, respectively. The effect of AS on chick embryonic **angiogenesis** decreased in a dose-dependent fashion. Retinoic acid strongly inhibited **angiogenesis** (80%) even at 1 μg/egg, but it may have a toxic effect to cells. The depolymerization mixture of AS by heparin lyase II did not cause any inhibition of **angiogenesis**, indicating that any contaminant in the intact AS could not act as an **angiogenic** inhibitor.

DETD [0043] The effect of **acharan sulfate** on the inhibition of **angiogenesis** was also evaluated in the matrigel plug assay. This assay was performed as previously described (Passaniti et al., 1992). **Acharan sulfate**, dissolved in water, bFGF and heparin, dissolved in 0.1% bovine serum albumen (BSA)/phosphate buffered saline (PBS) were mixed with liquid. . .

DETD [0044] To evaluate the effect of AS on ongoing **angiogenic** process in the mouse matrigel plug assay matrigel, heparin (10 units/500 μl), and bFGF (100 ng/500 μl) with or without. . . blood cells, indicating the formation of a functional vasculature inside the matrigel and blood circulation in newly formed vessels by **angiogenesis** induced by bFGF and heparin. Fifty micrograms of AS in combination with bFGF and heparin slightly prevented the vessel induction, indicating that AS suppressed the bFGF-stimulated **angiogenesis**. We next measured the hemoglobin content inside the matrigel plugs to quantify the **angiogenesis**. Whereas bFGF and heparin increased Hb concentration to 11.8 g/dl and the Hb concentration inside the control

was 0.3 g/dl,. . . (FIG. 3). Each value represents mean±S.E.M. of at least 5 animals. The data are significantly different from the control; **P<0.01 Anti-**angiogenesis** in this assay did not result from the effect of a vehicle of bFGF and the injection sites showed no signs of inflammation and hemorrhage. Anti-**angiogenesis** in this assay did not result from the effect of a vehicle of bFGF and the injection sites showed no. . .

DETD [0045] The effect of **acharan sulfate** on in vitro cell proliferation was carried out using calf pulmonary artery endothelial (CPAE) cells as follows.

DETD [0048] The effect of AS in vivo on **tumor** growth was evaluated as follows.

DETD [0049] Male C57BL/6 mice were inoculated s.c. in the back with LLC cells (1+10.sup.6/animal) on day 0. After **tumor** volume was at least 60-100 mm.sup.3, AS was administered into the subcutaneous region near the **tumor** mass at two doses of 10 and 30 mg/kg for 15 days. The size of **tumors** in all groups was measured using a dial-caliper and the volume of **tumors** was determined using the formula width.sup.2+length+0.52 (Voest et al., 1995; Cao et al., 1995). The effects of AS on **tumor** growth and host survival were also measured by evaluating **tumor** volumes, **tumor** weights and percentage increase in lifespan of **tumor** hosts, respectively (Oguchi et al., 1987; Kusumoto, 1991). For calculating the survival time, mice were inoculated i.p. with 106 **sarcoma** 180 cells/mouse on day 0 and the treatment with two doses of AS (50 and 100 mg/kg, i.p.) were started. . . days. The control group was treated with saline. Median survival time (MST) for each group (n=7) was observed and the **antitumor** activity of the test compounds were compared with that of control group by measuring the increase in lifespan.

DETD [0050] For solid **tumor** development, ICR mice were injected with 0.1 ml of **sarcoma** 180 suspensions into the right hind limbs. After 6 days of **tumor** transplantation, mice randomized into six groups were injected i.p. with AS (50 and 100 mg/kg) and 5-FU (25 mg/kg) once a day for 9 days. Eight days later after treatment, animals were sacrificed by cervical dissociation, and solid **tumors** were removed and weighed.

DETD [0051] The results of AS on **tumor** growth in C57BL/6 mice inoculated with Lewis lung **carcinoma** cells are shown in FIGS. 5 and 6. A daily subcutaneous injection of 10 and 30 mg/kg suppressed the growth of primary **tumors** during the 15-day treatment course. At the end of treatment, **tumor** growth was inhibited by 32.8% (3049.2 mm.sup.3) and 38.1% (2809.3 mm.sup.3), respectively at a dose of 10 mg/kg and 30 mg/kg, as compared to control mice treated with saline alone (4534.4 mm.sup.3). In contrast, **tumor** grew rapidly to sizes >4000 mm.sup.3 in saline-treated mice during the same 15-day treatment period. Doxorubicin as positive control was administered i.v. every five day at a dose of 10 mg/kg. It inhibited **tumor** growth by 62.0% (1721.6 mm.sup.3). The AS-treated mice did not lose weight over the course of treatment, indicating that AS showed little or no toxicity. On day 21, **tumor** tissues were removed and weighed. It was found that the **tumor** weight was reduced dose-dependently by the injection of AS as shown in FIG. 6. A mean **tumor** weight reductions by 37.8% (2.8±0.2 g) at 10 mg/kg and by 48.9% (2.3±0.2 g) at 30 mg/kg were observed, compared with the saline group (4.5±0.7 g). Doxorubicin significantly reduced the **tumor** weight by 68.0% (1.6±0.2 g). However, the loss of weight in the group of the doxorubicin-treated mice was marked as. . .

DETD [0052] The results of the effect of AS on solid **tumor** induced by **sarcoma** 180 **tumor** cells in ICR are shown in FIG.

7. As shown in FIG. 7A, the average **tumor** volume in the control was 8804±465.3 mm.sup.3. The level of the **tumor** volume in groups treated with 5-FU injection decreased by 82.1% (1572±201.5 mm.sup.3), compared with the control level. AS at the dose of 50 mg/kg inhibited the **tumor** volume by 45.0% (4799±345.2 mm.sup.3). AS at the dose of 50 mg/kg inhibited the **tumor** weight by 39.6% (4.3±0.1 g), while 5-FU at the dose of 25 mg/kg inhibited the **tumor** weight by 75.1% (1.8±0.3 g) and 55.8% (3.1±0.3 g), compared with the control (7.1±0.1 g) (FIG. 7B). The data were. . .

DETD [0053] The results of the effect of AS on the survival time in **sarcoma** 180 bearing mice are summarized in FIG. 8. The median survival time in the control was 22.4±2.2 days, while it. . .

DETD [0055] The foregoing results show that **acharan sulfate** acts as **angiogenesis** inhibitor and in an **antitumor** agent in vivo. Based on the above results AS does not influence proliferation of endothelial cells as demonstrated in the. . . results show that AS markedly inhibits the development of capillary networks at two concentrations (5 and 10 μg/CAM). Further the **antiangiogenic** activity of AS was confirmed by performing in vivo mouse matrigel plug assay. AS inhibited the formation of neovessels induced by a combination of bFGF and heparin in matrigel. In the foregoing experiments to evaluate the **antitumor** effect of AS in mice bearing murine LLC **tumors**, AS was given by daily subcutaneous injections at a site distant from the primary **tumor** . We speculated that one of the mechanisms for the **antiangiogenic** action of AS might be the suppression of matrix metalloprotease activity. However, AS shows no detectable antiprotease activity. AS also shows substantial **antitumor** activity against **sarcoma** 180-induced solid **tumor** and primary **tumor** in LLC-bearing C57BL/6 mice. A remarkable increase in lifespan was observed in **sarcoma** 180 ascitic **tumor.** Ascites fluids are direct nutritional sources for **tumor** cells.

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CLM What is claimed is:

1. A method of treating **cancer** in a host in need of treatment comprising administering to said host an anti-**cancer** effective amount of a compound of the formula [→4)-α-D-GlcNpAc(1→4)-α-L-IdoAp2S(1→]n wherein GlcNpAc is 2-acetamido 2-deoxyglucopyranose, IdoAp is idopyranosyluronic acid and S. . .

6. A method of treating a host by inhibiting an increase in the volume or mass of a **tumor** in said host in need of treatment which comprises administering to said host a compound of the formula [→4)-α-D-GlcNpAc(1→4)-α-L-IdoAp2S(1→]n wherein. . . n is 1 to 1000 in an amount effective to inhibit an increase in the volume or mass of a **tumor.**

. . . IdoAp is idopyranosyluronic acid and S is sulfate, and n is 1 to 1000 in an amount effective to treat **cancer** in a host by inhibiting **cancer** growth in said host

. . . and n is 1 to 1000 that is effective in inhibiting an increase in the volume or mass of a **tumor** in a host in need of such inhibiting effect.

IT **192662-57-0**, Acharan sulfate
(I and II; antitumor angiogenesis inhibitor acharan sulfate)

IT **192662-57-0**, Acharan sulfate
(I and II; antitumor angiogenesis inhibitor acharan sulfate)

RN 192662-57-0 USPATFULL

CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

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L60             18 SEA FILE=MEDLINE ABB=ON  PLU=ON  L50 OR L57 OR L59
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 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

=> d que nos L78

L1              STR
L3          1062 SEA FILE=REGISTRY SSS FUL L1
L18             STR
L20           79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L78            0 SEA FILE=EMBASE ABB=ON  PLU=ON  L20


=> d que nos L79

L25            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN SULFATE/CN
L79            0 SEA FILE=EMBASE ABB=ON  PLU=ON  L25


=> d que nos L80

L26            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN, N-DEACETYL-N-SULFO?/
                 CN
L80            0 SEA FILE=EMBASE ABB=ON  PLU=ON  L26


=> d que nos L82

L1              STR
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L18             STR
L20           79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L81              SEL  PLU=ON  L20 1- CHEM :       80 TERMS
L82            0 SEA FILE=EMBASE ABB=ON  PLU=ON  L81


=> d que nos L96

L25            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN SULFATE/CN
L26            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN, N-DEACETYL-N-SULFO?/
                 CN
L77           16 SEA FILE=EMBASE ABB=ON  PLU=ON  ACHARAN?
L83              SEL  PLU=ON  L25 1- CHEM :        2 TERMS
L84           16 SEA FILE=EMBASE ABB=ON  PLU=ON  L83
L85              SEL  PLU=ON  L26 1- CHEM :        2 TERMS
L86            4 SEA FILE=EMBASE ABB=ON  PLU=ON  L85
L87           16 SEA FILE=EMBASE ABB=ON  PLU=ON  L77 OR L84 OR L86
L88       851781 SEA FILE=EMBASE ABB=ON  PLU=ON  ?CANCER?
L89       778474 SEA FILE=EMBASE ABB=ON  PLU=ON  ?TUMOR? OR ?TUMOUR?
L90        90530 SEA FILE=EMBASE ABB=ON  PLU=ON  ?SARCOMA?
L91       230147 SEA FILE=EMBASE ABB=ON  PLU=ON  ?NEOPLAS?
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L92       517907 SEA FILE=EMBASE ABB=ON  PLU=ON  ?CARCINO?
L93        34532 SEA FILE=EMBASE ABB=ON  PLU=ON  ?ANGIOGEN?
L94      1349056 SEA FILE=EMBASE ABB=ON  PLU=ON  NEOPLASM+NT/CT
L95         4217 SEA FILE=EMBASE ABB=ON  PLU=ON  ANGIOGENESIS INHIBITOR/CT
L96            4 SEA FILE=EMBASE ABB=ON  PLU=ON  L87 AND (L88 OR L89 OR L90 OR
                  L91 OR L92 OR L93 OR L94 OR L95)


=> s (L78 or L79 or L80 or l82 or L96) not L163

L170           2 (L78 OR L79 OR L80 OR L82 OR L96) NOT L163

=> file biosis

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FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 15 February 2006 (20060215/ED)


=> d que nos L102

L1               STR
L3          1062 SEA FILE=REGISTRY SSS FUL L1
L18              STR
L20           79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L102           0 SEA FILE=BIOSIS ABB=ON  PLU=ON  L20


=> d que nos L106

L1               STR
L3          1062 SEA FILE=REGISTRY SSS FUL L1
L18              STR
L20           79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L105             SEL  PLU=ON  L20 1- CHEM :       80 TERMS
L106           0 SEA FILE=BIOSIS ABB=ON  PLU=ON  L105


=> d que nos L118

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L26            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN, N-DEACETYL-N-SULFO?/
                  CN
L101          22 SEA FILE=BIOSIS ABB=ON  PLU=ON  ACHARAN?
L103          17 SEA FILE=BIOSIS ABB=ON  PLU=ON  L25
L104           1 SEA FILE=BIOSIS ABB=ON  PLU=ON  L26
L107             SEL  PLU=ON  L25 1- CHEM :       2 TERMS
L108          21 SEA FILE=BIOSIS ABB=ON  PLU=ON  L107
L109             SEL  PLU=ON  L26 1- CHEM :       2 TERMS
L110           4 SEA FILE=BIOSIS ABB=ON  PLU=ON  L109
L111          22 SEA FILE=BIOSIS ABB=ON  PLU=ON  L101 OR L103 OR L104 OR L108
                  OR L110
L112      546518 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?CANCER?
L113      976062 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?TUMOR? OR ?TUMOUR?
L114       95426 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?SARCOMA?
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L115     759144 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?NEOPLAS?
L116     507193 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?CARCINO?
L117      35893 SEA FILE=BIOSIS ABB=ON  PLU=ON  ?ANGIOGEN?
L118          4 SEA FILE=BIOSIS ABB=ON  PLU=ON  L111 AND (L112 OR L113 OR L114
                OR L115 OR L116 OR L117)


=> s (L102 or L106 or L118) not L164

L171          2 (L102 OR L106 OR L118) NOT L164

=> file wpix

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FILE LAST UPDATED:          17 FEB 2006      <20060217/UP>
MOST RECENT DERWENT UPDATE:     200612        <200612/DW>
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http://www.stn-international.de/stndatabases/details/ipc_reform.html  and
http://scientific.thomson.com/media/scpdf/ipcrdwpi.pdf <<<

=> d que nos L159

L135     120107 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?CANCER?
L136     104777 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?TUMOR?
L137      12054 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?TUMOUR?
L138      34800 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?SARCOMA?
L139      37564 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?NEOPLAS?
L140      67199 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?CARCINO?
L141      22227 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?ANGIOGEN?
L156          5 SEA FILE=WPIX ABB=ON  PLU=ON  ACHARAN?
L157     119623 SEA FILE=WPIX ABB=ON  PLU=ON  (L135 OR L136 OR L137 OR L138 OR
                L139 OR L140 OR L141)
L159          3 SEA FILE=WPIX ABB=ON  PLU=ON  L156 AND L157
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=> d que nos L152

L18             STR
L151          1 SEA FILE=WPIX SSS FUL L18
L152          1 SEA FILE=WPIX ABB=ON  PLU=ON  L151/DCR


=> d que nos L158

L18             STR
L135     120107 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?CANCER?
L136     104777 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?TUMOR?
L137      12054 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?TUMOUR?
L138      34800 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?SARCOMA?
L139      37564 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?NEOPLAS?
L140      67199 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?CARCINO?
L141      22227 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?ANGIOGEN?
L151          1 SEA FILE=WPIX SSS FUL L18
L152          1 SEA FILE=WPIX ABB=ON  PLU=ON  L151/DCR
L157     119623 SEA FILE=WPIX ABB=ON  PLU=ON  (L135 OR L136 OR L137 OR L138 OR
                L139 OR L140 OR L141)
L158          0 SEA FILE=WPIX ABB=ON  PLU=ON  L152 AND L157


=> s (L159 or L152 or L158) not L165

L172          2 (L159 OR L152 OR L158) NOT L165
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=> file uspatfull

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FILE COVERS 1971 TO PATENT PUBLICATION DATE: 21 Feb 2006 (20060221/PD)
FILE LAST UPDATED: 21 Feb 2006 (20060221/ED)
HIGHEST GRANTED PATENT NUMBER: US7003800
HIGHEST APPLICATION PUBLICATION NUMBER: US2006037120
CA INDEXING IS CURRENT THROUGH 21 Feb 2006 (20060221/UPCA)
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 21 Feb 2006 (20060221/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Dec 2005
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Dec 2005


=> d que nos L128

L1              STR
L3           1062 SEA FILE=REGISTRY SSS FUL L1
L18             STR
L20            79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L127            SEL  PLU=ON  L20 1- CHEM :      80 TERMS
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=> d que nos L142

L1              STR
L3           1062 SEA FILE=REGISTRY SSS FUL L1
L18             STR
L20            79 SEA FILE=REGISTRY SUB=L3 SSS FUL L18
L25             1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN SULFATE/CN
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L26             1 SEA FILE=REGISTRY ABB=ON  PLU=ON  ACHARAN, N-DEACETYL-N-SULFO?/
                  CN
L124            1 SEA FILE=USPATFULL ABB=ON  PLU=ON  L20
L125            2 SEA FILE=USPATFULL ABB=ON  PLU=ON  L25
L126            1 SEA FILE=USPATFULL ABB=ON  PLU=ON  L26
L129              SEL  PLU=ON  L25 1- CHEM :        2 TERMS
L130            4 SEA FILE=USPATFULL ABB=ON  PLU=ON  L129
L131              SEL  PLU=ON  L26 1- CHEM :        2 TERMS
L132            1 SEA FILE=USPATFULL ABB=ON  PLU=ON  L131
L133            4 SEA FILE=USPATFULL ABB=ON  PLU=ON  ACHARAN?
L134            5 SEA FILE=USPATFULL ABB=ON  PLU=ON  L124 OR L125 OR L126 OR
                  L130 OR L132 OR L133
L135       120107 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?CANCER?
L136       104777 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?TUMOR?
L137        12054 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?TUMOUR?
L138        34800 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?SARCOMA?
L139        37564 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?NEOPLAS?
L140        67199 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?CARCINO?
L141        22227 SEA FILE=USPATFULL ABB=ON  PLU=ON  ?ANGIOGEN?
L142            4 SEA FILE=USPATFULL ABB=ON  PLU=ON  L134 AND (L135 OR L136 OR
                  L137 OR L138 OR L139 OR L140 OR L141)


=> s (L128 or L142) not L166

L173            2 (L128 OR L142) NOT L166

=> => dup rem L168 L169 L170 L171 L172 L173
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PROCESSING COMPLETED FOR L169
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PROCESSING COMPLETED FOR L171
PROCESSING COMPLETED FOR L172
PROCESSING COMPLETED FOR L173
L174            8 DUP REM L168 L169 L170 L171 L172 L173 (7 DUPLICATES REMOVED)
                  ANSWERS '1-4' FROM FILE CAPLUS
                  ANSWER '5' FROM FILE MEDLINE
                  ANSWER '6' FROM FILE WPIX
                  ANSWERS '7-8' FROM FILE USPATFULL

=> d ibib abs hitind hitstr L174 1-4; d iall L174 5; d ibib abs hitstr L174 6; d
ibib abs kwic hitstr L174 7-8
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L174 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 2004:727950 CAPLUS
DOCUMENT NUMBER: 141:376745
TITLE: Detection of 2-O-sulfated iduronate and N-acetylglucosamine units in heparan sulfate by an antibody selected against **acharan sulfate** (IdoA2S-GlcNAc)n
AUTHOR(S): ten Dam, Gerdy B.; van de Westerlo, Els M. A.; Smetsers, Toon F. C. M.; Willemse, Marieke; van Muijen, Goos N. P.; Merry, Catherine L. R.; Gallagher, John T.; Kim, Yeong S.; van Kuppevelt, Toin H.
CORPORATE SOURCE: Departments of Biochemistry and Pathology, Nijmegen Center for Molecular Life Sciences, University Medical Center Nijmegen, Nijmegen, 6500 HB, Neth.
SOURCE: Journal of Biological Chemistry (2004), 279(37), 38346-38352
CODEN: JBCHA3; ISSN: 0021-9258
PUBLISHER: American Society for Biochemistry and Molecular Biology
DOCUMENT TYPE: Journal
LANGUAGE: English

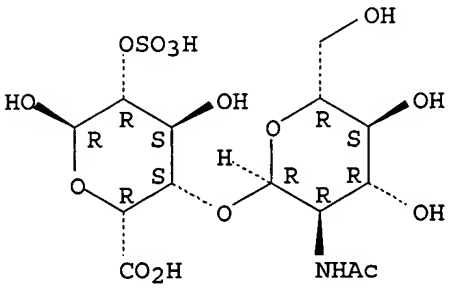
AB The snail glycosaminoglycan **acharan** sulfate (AS) is structurally related to heparan sulfates (HS) and has a repeating disaccharide structure of α-D-N-acetylglucosaminyl-2-O-sulfo-α-L-iduronic acid (GlcNAc-IdoA2S) residues. Using the phage display technol., a unique antibody (MW3G3) was selected against AS with a VH3, DP 47, and a CDR3 amino acid sequence of QKKRPRF. Antibody MW3G3 did not react with desulfated, N-deacetylated or N-sulfated AS, indicating that reactivity depends on N-acetyl and 2-O-sulfate groups. Antibody MW3G3 also had a high preference for (modified) heparin oligosaccharides containing N-acetylated glucosamine and 2-O-sulfated iduronic acid residues. In tissues, antibody MW3G3 identified a HS oligosaccharide epitope containing N-acetylated glucosamine and 2-O-sulfated iduronic acid residues as enzymic N-deacetylation of HS in situ prevented staining, and 2-O-sulfotransferase-deficient Chinese hamster ovary cells were not reactive. An immunohistochem. survey using various rat organs revealed a distinct distribution of the MW3G3 epitope, which was primarily present in the basal laminae of most (but not all) blood vessels and of some epithelia, including human skin. No staining was observed in the glycosaminoglycan-rich **tumor** matrix of metastatic melanoma. In conclusion, we have selected an antibody that identifies HS oligosaccharides containing N-acetylated glucosamine and 2-O-sulfated iduronic acid residues. This antibody may be instrumental in identifying structural alterations in HS in health and disease.

CC 9-16 (Biochemical Methods)
IT Blood vessel
Human
Melanoma
Phage display
Skin
Snail
(detection of 2-O-sulfated iduronate and N-acetylglucosamine units in heparan sulfate by an antibody selected against **acharan sulfate** (IdoA2S-GlcNAc)n)
IT Antibodies and Immunoglobulins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(detection of 2-O-sulfated iduronate and N-acetylglucosamine units in heparan sulfate by an antibody selected against **acharan sulfate** (IdoA2S-GlcNAc)n)

IT 7512-17-6, N-Acetylglucosamine 9050-30-0 **192662-57-0**, **Acharan sulfate**
RL: BSU (Biological study, unclassified); BIOL (Biological study) (detection of 2-O-sulfated iduronate and N-acetylglucosamine units in heparan sulfate by an antibody selected against **acharan sulfate** (IdoA2S-GlcNAc)n)
IT **177791-14-9**
RL: BSU (Biological study, unclassified); BIOL (Biological study) (repeating unit, detection of 2-O-sulfated iduronate and N-acetylglucosamine units in heparan sulfate by an antibody selected against **acharan sulfate** (IdoA2S-GlcNAc)n)
IT **192662-57-0**, **Acharan sulfate**
RL: BSU (Biological study, unclassified); BIOL (Biological study) (detection of 2-O-sulfated iduronate and N-acetylglucosamine units in heparan sulfate by an antibody selected against **acharan sulfate** (IdoA2S-GlcNAc)n)
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **177791-14-9**
RL: BSU (Biological study, unclassified); BIOL (Biological study) (repeating unit, detection of 2-O-sulfated iduronate and N-acetylglucosamine units in heparan sulfate by an antibody selected against **acharan sulfate** (IdoA2S-GlcNAc)n)
RN 177791-14-9 CAPLUS
CN α-L-Idopyranuronic acid, 4-O-[2-(acetylamino)-2-deoxy-α-D-glucopyranosyl]-, 2-(hydrogen sulfate) (9CI) (CA INDEX NAME)

Absolute stereochemistry.



REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L174 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2
ACCESSION NUMBER: 2004:924013 CAPLUS
DOCUMENT NUMBER: 142:109434
TITLE: Novel **acharan sulfate** lyases specifically degrading **acharan sulfate**, preparing method and use thereof
INVENTOR(S): Kim, Byeong Taek; Kim, Dong Hyun; Kim, Wan Seok; Kim, Young Sik
PATENT ASSIGNEE(S): S. Korea
SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2002046294	A	20020621	KR 2000-75605	20001212
PRIORITY APPLN. INFO.:			KR 2000-75605	20001212

AB Novel **acharan** sulfate lyases specifically degrading **acharan** sulfate, a preparing method and a use thereof are provided, therefore the **acharan** sulfate lyase having improved substrate specificity and stability can be produced and it can be useful in producing **acharan** sulfate oligosaccharides inhibiting the metastasis of **cancer.** The **acharan** sulfate lyase capable of degrading glycosaminoglycans (GAG) is isolated from Bacteroides stercoris HJ-15, wherein glycosaminoglycans (GAG) are **acharan** sulfate, heparin and heparan sulfate; the **acharan** sulfate lyase has 82,500 Da of mol. weight and optimal pH of 7.0 to 7.2 and optimal temperature of 42 to 45 deg. C; and the activity of enzyme is increased by Mg2+ or Mn2+ and inhibited by Cu2+ or Ni2+. The method for producing the **acharan** sulfate lyase comprises the steps of: culturing Bacteroides stercoris in an appropriate medium; recovering the cultured cells and preparing cell extract; and subjecting the cell extract to chromatog., wherein the chromatog. is selected from QAE-cellulose, DEAE-cellulose, CM-Sephadex C-50, hydroxyapatite, CM-Sephadex C-25 and Hi-Trap SP.

IC ICM C12N009-88

CC 7-1 (Enzymes)
Section cross-reference(s): 1, 9, 10

ST Bacteroides **acharan sulfate** lyase glycosaminoglycan degrdn

IT **Neoplasm**
(metastasis, inhibition; novel **acharan sulfate** lyases specifically degrading **acharan sulfate**, preparing method and use thereof)

IT **Antitumor** agents
Bacteroides stercoris
Purification
(novel **acharan sulfate** lyases specifically degrading **acharan sulfate**, preparing method and use thereof)

IT Glycosaminoglycans, processes
RL: BCP (Biochemical process); BIOL (Biological study); PROC (Process)
(novel **acharan sulfate** lyases specifically degrading **acharan sulfate**, preparing method and use thereof)

IT 9005-49-6, Heparin, processes 9050-30-0 **192662-57-0, Acharan sulfate**
RL: BCP (Biochemical process); BIOL (Biological study); PROC (Process)
(novel **acharan sulfate** lyases specifically degrading **acharan sulfate**, preparing method and use thereof)

IT 216503-91-2P, **Acharan sulfate** lyase
RL: BSU (Biological study, unclassified); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(novel **acharan sulfate** lyases specifically degrading **acharan sulfate**, preparing method and use thereof)

IT **192662-57-0, Acharan sulfate**
RL: BCP (Biochemical process); BIOL (Biological study); PROC (Process)
(novel **acharan sulfate** lyases specifically

degrading **acharan sulfate**, preparing method and use thereof)
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L174 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3
ACCESSION NUMBER: 2002:813649 CAPLUS
DOCUMENT NUMBER: 138:314215
TITLE: Inhibition by **acharan** sulphate of **angiogenesis** in experimental inflammation models
AUTHOR(S): Ghosh, Ajoy Kumar; Hirasawa, Noriyasu; Lee, Yeon Sil; Kim, Yeong Sik; Shin, Kuk Hyun; Ryu, Nama; Ohuchi, Kazuo
CORPORATE SOURCE: Laboratory of Pathophysiological Biochemistry, Graduate School of Pharmaceutical Sciences, Tohoku University, Miyagi, 980-8578, Japan
SOURCE: British Journal of Pharmacology (2002), 137(4), 441-448
CODEN: BJPCBM; ISSN: 0007-1188
PUBLISHER: Nature Publishing Group
DOCUMENT TYPE: Journal
LANGUAGE: English
AB 1 The effects of **acharan** sulfate, a glycosaminoglycan isolated from the giant African snail Achatina fulica, on **angiogenesis** in the granulation tissue were analyzed using an air pouch-type carrageenin-induced inflammation model in rats and a cotton thread-induced inflammation model in mice. 2 In the carrageenin-induced inflammation model in rats, intra-pouch injections of **acharan** sulfate (5 and 50 μg) inhibited the pouch fluid accumulation and the granulation tissue formation as well as the **angiogenesis** in the granulation tissue at day 6 in a dose-dependent manner. 3 The inhibitory effects of **acharan** sulfate at 50 μg on the pouch fluid accumulation and the leukocyte infiltration into the pouch fluid was not so effective as that of the cyclo-oxygenase inhibitor indomethacin at 100 μg, but the inhibitory effects of **acharan** sulfate at 50 μg on the granulation tissue formation and **angiogenesis** in the granulation tissue were almost the same as those of indomethacin at 100 μg. 4 **Acharan** sulfate did not affect levels of vascular endothelial growth factor (VEGF) in the granulation tissue and in the pouch fluid at day 6, but indomethacin significantly lowered them. 5 In the cotton thread-induced inflammation model in mice, injections of **acharan** sulfate (10 μg) at the site of the cotton thread implantation inhibited the granulation tissue formation and **angiogenesis** as indomethacin (20 μg) did. **Acharan** sulfate (10 μg) did not affect levels of VEGF in the cotton thread-induced granulation tissue at day 5, but indomethacin (20 μg) significantly lowered them. 6 In culture of human vascular endothelial cells, **acharan** sulfate at 10 and 100 μg ml-1 inhibited VEGF-induced capillary tube formation. 7 These findings suggest that the inhibitory effect of **acharan** sulfate on **angiogenesis** in carrageenin- and cotton thread-induced granulation tissues is not due to the inhibition of VEGF protein induction, but is due to the inhibition of VEGF-induced vascular tube formation.
CC 1-8 (Pharmacology)
ST **acharan sulfate angiogenesis** inhibitor inflammation VEGF
IT Blood vessel

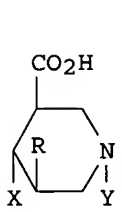
(endothelium; inhibition by **acharan sulfate** of **angiogenesis** in exptl. inflammation models)
IT **Angiogenesis**
Angiogenesis inhibitors
Capillary vessel
Human
Inflammation
(inhibition by **acharan sulfate** of **angiogenesis** in exptl. inflammation models)
IT Endothelium
(vascular; inhibition by **acharan sulfate** of **angiogenesis** in exptl. inflammation models)
IT 106096-93-9, Basic fibroblast growth factor 127464-60-2, Vascular endothelial growth factor
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(inhibition by **acharan sulfate** of **angiogenesis** in exptl. inflammation models)
IT 53-86-1, Indomethacin 145-63-1, Suramin **192662-57-0**, **Acharan sulfate**
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(inhibition by **acharan sulfate** of **angiogenesis** in exptl. inflammation models)
IT **192662-57-0**, **Acharan sulfate**
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(inhibition by **acharan sulfate** of **angiogenesis** in exptl. inflammation models)
RN 192662-57-0 CAPLUS
CN Acharan, hydrogen sulfate (ester) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

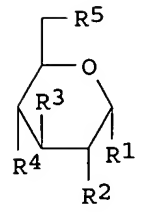
L174 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:79185 CAPLUS
DOCUMENT NUMBER: 144:150592
TITLE: Preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents
INVENTOR(S): Petitou, Maurice; Driguez, Pierre Alexandre
PATENT ASSIGNEE(S): Sanofi-Synthelabo, Fr.
SOURCE: Fr. Demande, 72 pp.
CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2873377	A1	20060127	FR 2004-8160	20040723
PRIORITY APPLN. INFO.:			FR 2004-8160	20040723

GI



I



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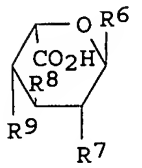
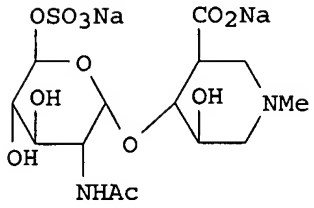


III



IV

AB Title aza sugars I, wherein R is H, OH, OSO3H, acyl, O-aralkyl; X is OH, formula II, wherein R1 is O-sugar residue; R2 is NH2, NHCO-alkyl, NHCO-aryl, NHSO3H, OH, O-alkyl, O-aralkyl, OSO3H; R3 is OH, OSO3H, O-alkyl, O-aralkyl; R4 is OH, OSO3H, O-alkyl, O-aralkyl, sugar formula III, wherein R6 is O-sugar residue; R7 and R8 are independently same as R3; R9 is OH, OSO3H, O-alkyl, O-aralkyl, sugar residue; Y is H, alkyl, sugar residue, uronic acid residue, were prepared and used as as heparanase inhibitors and **antitumor** and antiinflammatory agents. Thus, disaccharide uronic acid II was prepared and used as heparanase inhibitor and **antitumor** and antiinflammatory agent (no data).

CC 33-8 (Carbohydrates)
Section cross-reference(s): 1, 7, 63

ST aza uronic acid prepn heparanase inhibitor **antitumor** antiinflammatory drug

IT Anti-inflammatory agents
Antitumor agents
Drugs
(preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)

IT Disaccharides
Uronic acids
RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)

IT 89800-66-8, Heparanase
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)

IT **873664-70-1P** 873664-71-2P 873664-72-3P **873664-73-4P**
873664-77-8P 873664-96-1P 873665-17-9P 873665-21-5P 873665-32-8P
873665-33-9P 873665-34-0P 873665-38-4P
RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)

IT 67313-50-2 103703-07-7 114869-97-5 131522-43-5 135415-92-8
873664-53-0 873664-81-4 873664-99-4

RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)

IT 215725-53-4P 873664-54-1P 873664-55-2P 873664-56-3P 873664-57-4P
873664-58-5P 873664-59-6P 873664-60-9P 873664-61-0P 873664-62-1P
873664-63-2P 873664-64-3P 873664-65-4P 873664-66-5P 873664-67-6P
873664-68-7P **873664-69-8P** 873664-74-5P 873664-75-6P
873664-76-7P 873664-78-9P 873664-79-0P 873664-80-3P 873664-82-5P
873664-83-6P 873664-84-7P 873664-85-8P 873664-86-9P 873664-87-0P
873664-88-1P 873664-89-2P 873664-90-5P 873664-91-6P 873664-92-7P
873664-93-8P 873664-94-9P 873664-95-0P 873664-97-2P 873664-98-3P
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873665-10-2P 873665-11-3P 873665-12-4P 873665-13-5P 873665-14-6P
873665-15-7P 873665-16-8P 873665-18-0P 873665-19-1P 873665-20-4P
873665-22-6P 873665-23-7P 873665-24-8P 873665-25-9P 873665-26-0P
873665-27-1P 873665-28-2P 873665-29-3P 873665-30-6P 873665-31-7P
873665-35-1P 873665-36-2P 873665-37-3P 873839-12-4P 873839-13-5P
873839-14-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)

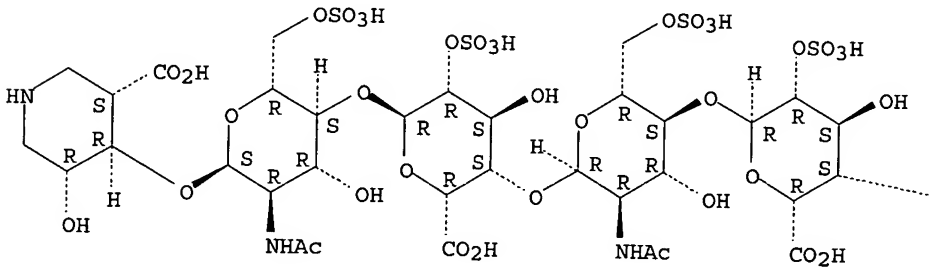
IT 873665-39-5P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)

IT **873664-70-1P 873664-73-4P**
RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)

RN 873664-70-1 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

Absolute stereochemistry.

PAGE 1-A

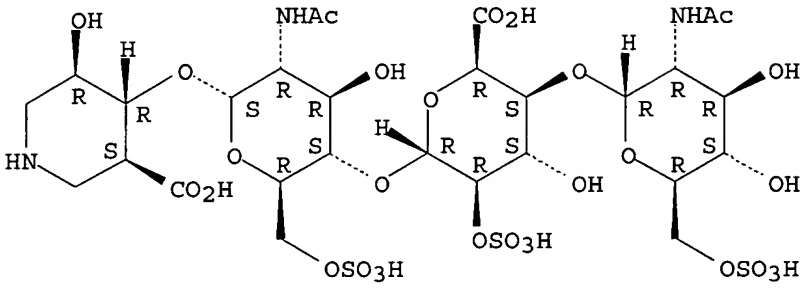


●8 Na

OSO_3H

RN 873664-73-4 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

Absolute stereochemistry.

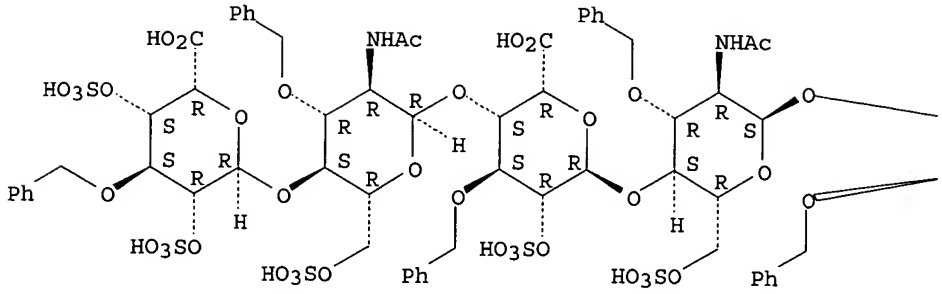


●5 Na

IT **873664-69-8P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of aza uronic acids as heparanase inhibitors and **antitumor** and antiinflammatory agents)
RN 873664-69-8 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

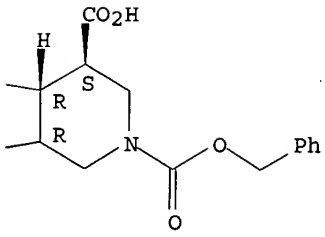
Absolute stereochemistry.

PAGE 1-A



●8 Na

PAGE 1-B



REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L174 ANSWER 5 OF 8 MEDLINE on STN
ACCESSION NUMBER: 2000014519 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10545209
TITLE: Effect of fully sulfated glycosaminoglycans on pulmonary artery smooth muscle cell proliferation.
AUTHOR: Garg H G; Joseph P A; Thompson B T; Hales C A; Toida T; Imanari T; Capila I; Linhardt R J
CORPORATE SOURCE: Pulmonary/Critical Care Unit, Massachusetts General Hospital, Boston, Massachusetts 02114, USA.. hgarg@partners.org
SOURCE: Archives of biochemistry and biophysics, (1999 Nov 15) 371 (2) 228-33.
Journal code: 0372430. ISSN: 0003-9861.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199912

ENTRY DATE: Entered STN: 20000113
Last Updated on STN: 20000113
Entered Medline: 19991221

ABSTRACT:
Fully sulfated heparin and other glycosaminoglycans, namely heparan, chondroitin, and dermatan sulfates, and hyaluronan have been prepared by using sulfur trioxide under mild chemical conditions. All these derivatives were assayed for antiproliferative activity on cultured bovine pulmonary artery smooth muscle cells (BPASMCs). No appreciable difference was found between heparin and fully sulfated heparin. Chondroitin and dermatan sulfates actually stimulated BPASMCs growth but full sulfonation made them strongly antiproliferative. Native hyaluronan was not antiproliferative but became strongly so after sulfonation. Neither **acharan sulfate** nor ***N*** **-sulfoacharan sulfate** had any antiproliferative activity. This suggests that O-sulfonation of the polysaccharide is critical for antiproliferative activity, whereas N-sulfonation of glucosamine residues is not.

CONTROLLED TERM: Check Tags: Comparative Study
Animals
***Antineoplastic Agents: PD, pharmacology**
Carbohydrate Sequence
Cattle
Cells, Cultured
Glycosaminoglycans: CH, chemistry
*Glycosaminoglycans: PD, pharmacology
Molecular Sequence Data
*Muscle, Smooth, Vascular: DE, drug effects
*Pulmonary Artery: CY, cytology
Sequence Analysis
CAS REGISTRY NO.: 64082-61-7 (A73025)
CHEMICAL NAME: 0 (**Antineoplastic** Agents); 0 (Glycosaminoglycans)

L174 ANSWER 6 OF 8 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN
ACCESSION NUMBER: 2006-100079 [10] WPIX
DOC. NO. CPI: C2006-035709
TITLE: New oligosaccharide compounds are neuronal growth modulators useful to treat neurological disorder (CNS lesions, gliosis, Parkinson's disease, Alzheimer's disease, neuronal degeneration or spinal cord trauma).
DERWENT CLASS: A11 A14 A96 B02 B04
INVENTOR(S): GAMA, C I; HSIEH-WILSON, L C; MABON, R; TULLY, S E
PATENT ASSIGNEE(S): (GAMA-I) GAMA C I; (HSIE-I) HSIEH-WILSON L C; (MABO-I) MABON R; (TULL-I) TULLY S E; (CALY) CALIFORNIA INST OF TECHNOLOGY
COUNTRY COUNT: 111
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2005118609	A2	20051215	(200610)*	EN	89

RW: AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IS IT KE LS LT LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KM KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NG NI

NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SM SY TJ TM TN TR TT
TZ UA UG US UZ VC VN YU ZA ZM ZW
US 2006025379 A1 20060202 (200610)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2005118609	A2	WO 2005-US18906	20050526
US 2006025379	A1 Provisional	US 2004-574433P	20040526
		US 2005-140618	20050526

PRIORITY APPLN. INFO: US 2004-574433P 20040526; US 2005-140618 20050526

AN 2006-100079 [10] WPIX

AB WO2005118609 A UPAB: 20060209

NOVELTY - Oligosaccharide compounds (I) and their derivatives are new.

DETAILED DESCRIPTION - Oligosaccharide compounds of formula (I) and their derivatives are new.

R1-R4 = H, sulfate, phosphate or carboxylate;

R5 = alkyl or alkenyl (both optionally substituted); and

n = 0-100.

INDEPENDENT CLAIMS are also included for:

(1) a polysaccharide compound containing a repeating dimer unit of formula (IIa);

(2) a substantially pure compound (I);

(3) a oligosaccharide compound (III) of formula (R-L-R);

(4) a glycopolymer (IV) comprising a polymer backbone P conjugated with a R via a linker L (P is a polymer (polyacrylamide, polyacrylate of poly(N-acryloxy)succinimide));

(5) a method of inducing growth of differentiated neural stem cells comprising administration of (I);

(6) a method for screening for small molecule inducers of neuronal growth comprising applying to a cultured neuron a small molecule of (I) and determining an increase in percent growth in axon length of treated versus untreated neuron; and

(7) an article of manufacture comprising packaging material (I).

R = oligosaccharide compound of formula (IIIa); and

L = bifunctional linker molecule

Provided that R1-R4 is not H, when R1 is sulfate, then R2 is not OH, when R2 is sulfate, then R1 is not OH.

ACTIVITY - Neuroprotective; CNS-Gen.; Antiparkinsonian; Nootropic; Vulnerary.

MECHANISM OF ACTION - Neuronal growth modulator; Fibroblast growth factor modulator.

The ability of (I) to modulate neuronal growth was tested using biological assays. The results showed that (I) promotes outgrowth of cultured dopaminergic and DRG neurons by 30-40% relative to the untreated controls.

USE - (I) is useful: to treat a neurological disorder (central nervous system lesions, gliosis, Parkinson's disease, Alzheimer's disease, neuronal degeneration or spinal cord trauma); and promotes regeneration of an injured or severed nerve or nerve tissue or promotes outgrowth in a neuronal cell (brain, CNS or peripheral nerves) and neuronal growth in a cultured neuron (hippocampal neurons, dopaminergic neurons or dorsal root ganglion neuron) (claimed).

ADVANTAGE - (I) is substantially pure (claimed).

Dwg.0/7

DCSE 1239692-1-0-0

SDCN RALA6S

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

L174 ANSWER 7 OF 8 USPATFULL on STN
ACCESSION NUMBER: 2006:28545 USPATFULL
TITLE: Small molecule stimulators of neuronal growth
INVENTOR(S): Hsieh-Wilson, Linda C., San Marino, CA, UNITED STATES
Tully, Sarah E., Pasadena, CA, UNITED STATES
Mabon, Ross, Princeton, NJ, UNITED STATES
Gama, Cristal I., Los Angeles, CA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2006025379	A1	20060202
APPLICATION INFO.:	US 2005-140618	A1	20050526 (11)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2004-574433P	20040526 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: FISH & RICHARDSON, PC, P.O. BOX 1022, MINNEAPOLIS, MN, 55440-1022, US
NUMBER OF CLAIMS: 57
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 7 Drawing Page(s)
LINE COUNT: 2411
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Provided herein are small molecule stimulators of neuronal growth, their preparation, and their use for treatment of neurological disorders. In one embodiment, provided herein are methods of treatment, prevention, or amelioration of a variety of medical conditions associated with neurological disorders using the compounds and compositions provided herein.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
SUMM . . . the growth of the implanted tissue. In certain embodiments, the compounds provided herein interact with growth factors and cytokines (e.g., **tumor** necrosis factor-α or TNFα and nerve growth factor or NGF).
DRWD FIG. 5 illustrates binding selectivity of tetrasaccharides CS-E and CS-C, and dimer CS-E to **tumor** necrosis factor-α.
DETD In one embodiment, liposomal suspensions, including tissue-targeted liposomes, such as **tumor**-targeted liposomes, may also be suitable as pharmaceutically acceptable carriers. These may be prepared according to methods known to those skilled. . .
DETD . . . 30-40% relative to the untreated controls. FIGS. 5 and 7 illustrate binding of tetrasaccharides CS-E, CS-C and disaccharide CS-E to **tumor** necrosis factor-α and midkine, respectively.
DETD . . . proteins or other factors that stimulate the growth. In certain embodiments, the compounds provided herein are administered in combination with **tumor** necrosis factor-α or TNFα and nerve growth factor or NGF. In certain embodiments, the compounds

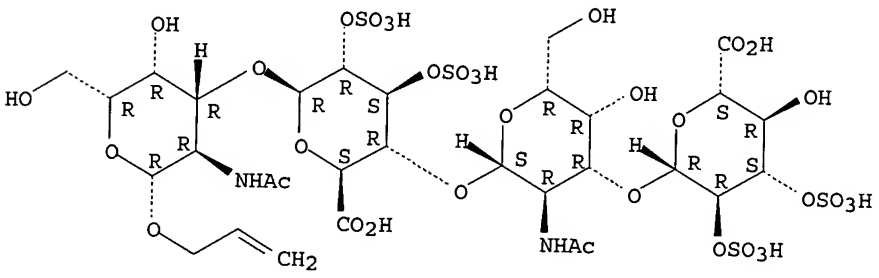
provided herein interact with growth factors and cytokines (e.g., **tumor** necrosis factor-α or TNFα and nerve growth factor or NGF).

IT 727991-33-5P 727991-35-7P 866719-13-3P 871095-82-8P 871095-83-9P
871095-84-0P
(preparation of acetamidodeoxy-oligosaccharide uronic acids as small mol. stimulators of neuronal growth)

IT **871095-84-0P**
(preparation of acetamidodeoxy-oligosaccharide uronic acids as small mol. stimulators of neuronal growth)

RN 871095-84-0 USPATFULL
CN INDEX NAME NOT YET ASSIGNED

Absolute stereochemistry.



●6 Na

L174 ANSWER 8 OF 8 USPATFULL on STN

ACCESSION NUMBER:	2003:238439 USPATFULL
TITLE:	Method for linking nucleic acids and/or glycosaminoglycans to polar/hydrophilic materials
INVENTOR(S):	Van Kuppevelt, Antonius H M S M, Nijmegen, NETHERLANDS Veerkamp, Jacobus Henricus, Nijmegen, NETHERLANDS Blank, Thiemo Arnim, Plankstadt, GERMANY, FEDERAL REPUBLIC OF

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2003166597	A1	20030904	
	US 6933379	B2	20050823	
APPLICATION INFO.:	US 2003-258093	A1	20030404	(10)
	WO 2001-EP3666		20010330	

	NUMBER	DATE
PRIORITY INFORMATION:	GB 2000-9771	20000419

DOCUMENT TYPE:	Utility
FILE SEGMENT:	APPLICATION
LEGAL REPRESENTATIVE:	Jesse A Hirshman, Kirkpatrick & Lockhart, Henry W Oliver Building, 535 Smithfield Street, Pittsburgh, PA, 15222-2312
NUMBER OF CLAIMS:	20
EXEMPLARY CLAIM:	1
NUMBER OF DRAWINGS:	3 Drawing Page(s)

LINE COUNT: 776
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention relates to a method for linking nucleic acid and/or glycosaminoglycan or glycosaminoglycan mimetics to a polar/hydrophilic material, characterized by contacting a nucleic acid and/or glycosaminoglycan and a polar/hydrophilic material with each other in the presence of a solution being 20 to 100 percent saturated with a non-chaotropic salt and removing said solution from the nucleic acid and/or glycosaminoglycan--polar/hydrophilic material.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
DETD . . . disaccharide. Within the meaning of the present invention, glycosaminoglycans include heparin, heparan sulfate, hyaluronate, chondroitin sulfate, dermatan sulfate, chitosan sulfate **acharan sulfate** and keratan sulfate and derivatives thereof.
DETD . . . deliver radioactive compounds to a speicific site in the body for radiological treatment of diseases such as various forms of **cancer.**

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